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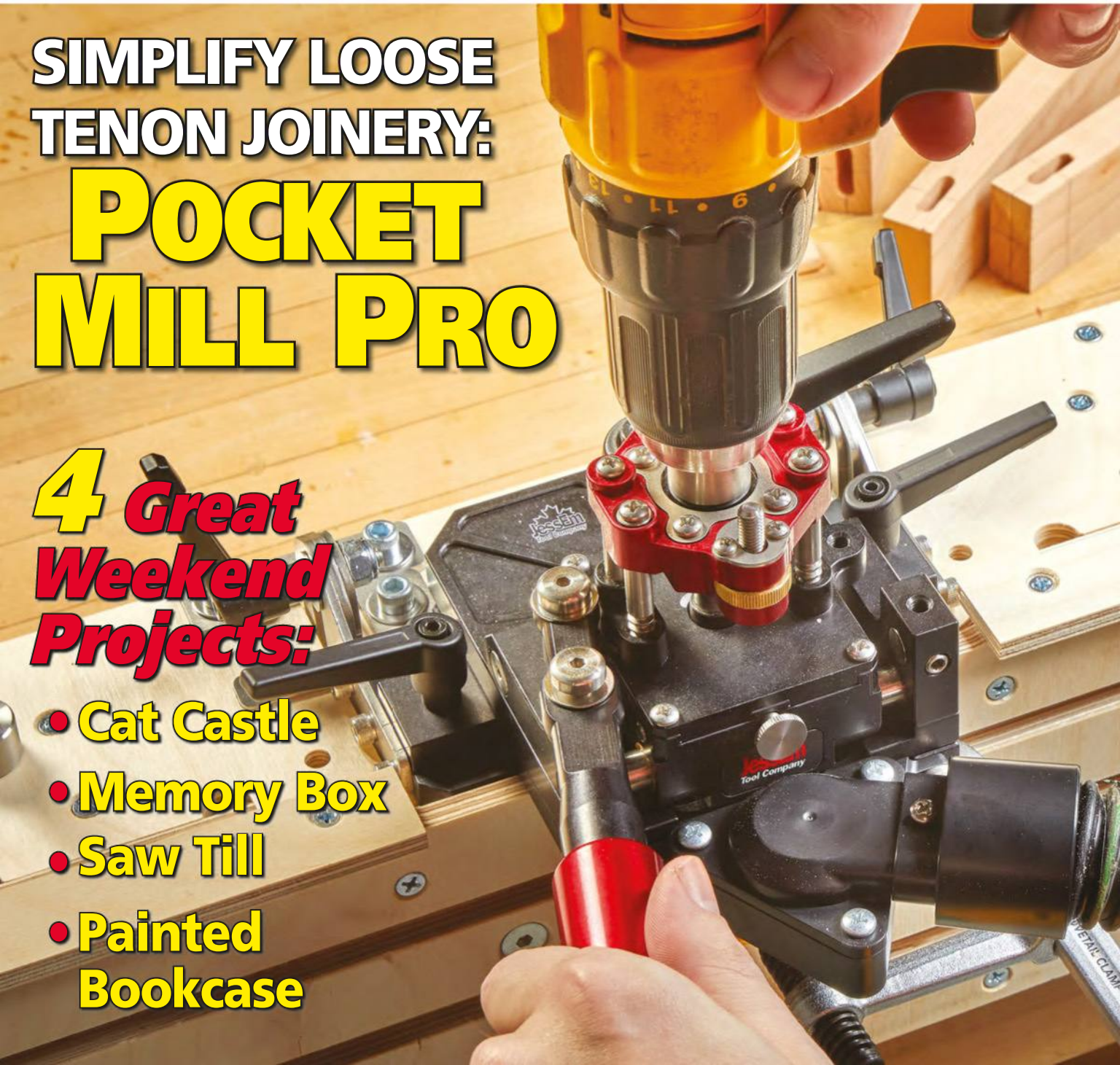

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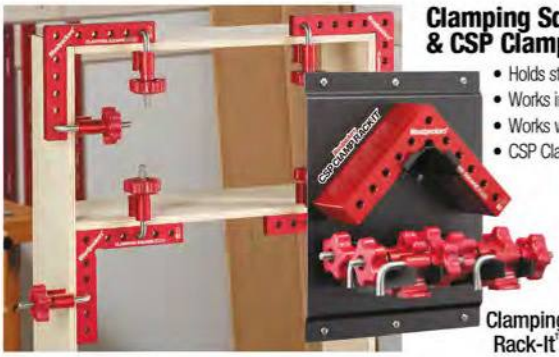

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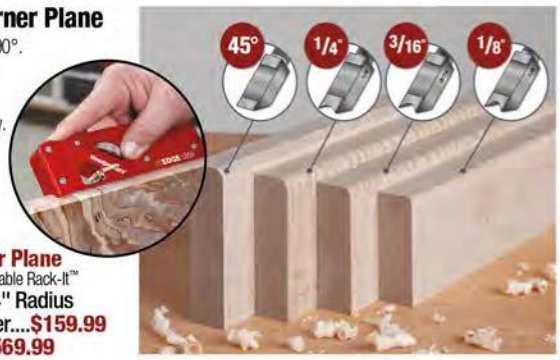

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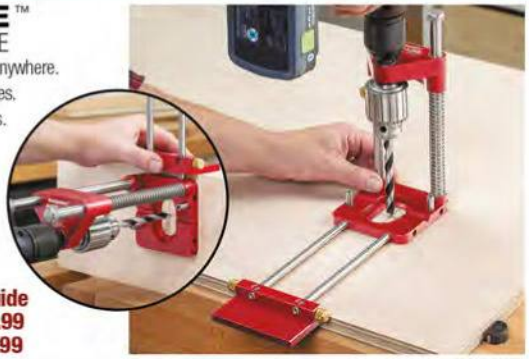

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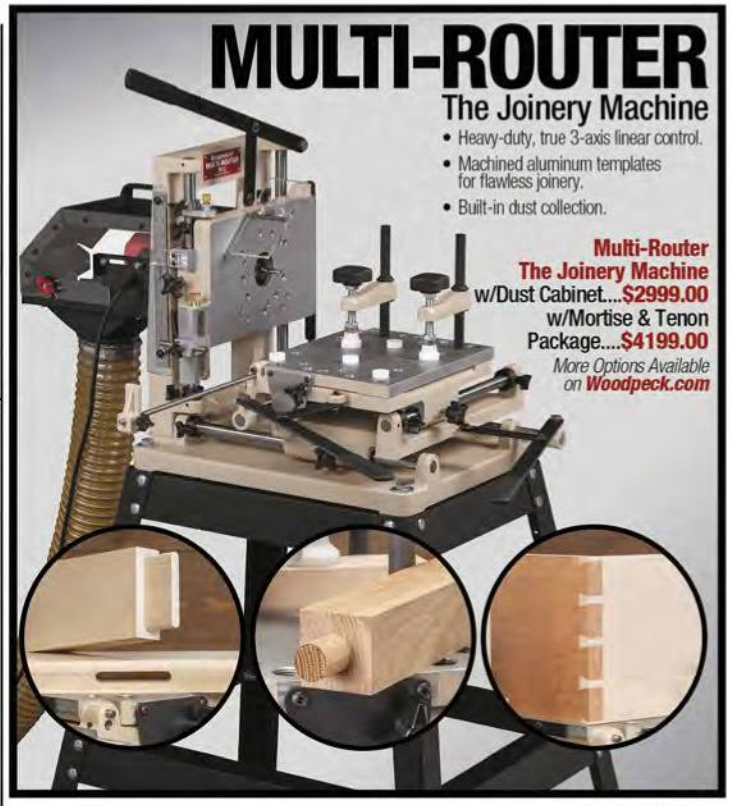

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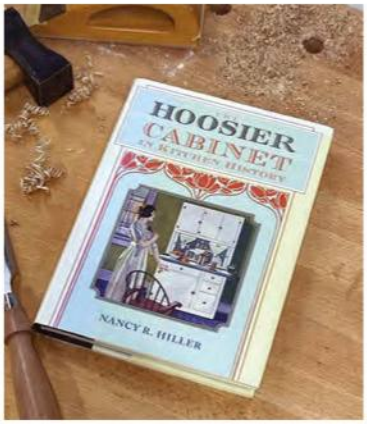
from the editor

Sawdust

There are five projects in every issue of Woodsmith. That's a lot of ground to cover for the designers, editors, and illustrators. Coming up with ideas that are new, inspired, fun, and even simple to construct keeps us busy.

This issue has four projects that I would qualify as weekend projects: the Cat Castle, Memory Box, Saw Till, and Pine Bookcase. The other is a throwback.



In *Woodsmith* no. 124 (August 1999), we featured a Hoosier cabinet inspired by one of the first pre-made kitchen cabinets and a fixture in many old houses. It's proven to be a popular plan. We even sold a hardware kit to go with it.

For our new version, creative director Chris Fitch read the late Nancy Hiller's book *The Hoosier Cabinet in Kitchen History* on the origins and design of these interesting pieces. I highly recommend adding it to your woodworking library. Turns out there are plenty of variations, features, and styles.

Personally, I've wanted to make my own version ever since I saw one in the kitchen of my friends Big Jer and Judy. Chris' design has me thinking about moving that project farther up the list and reliving fond memories of pierogies and tuna cheesies.

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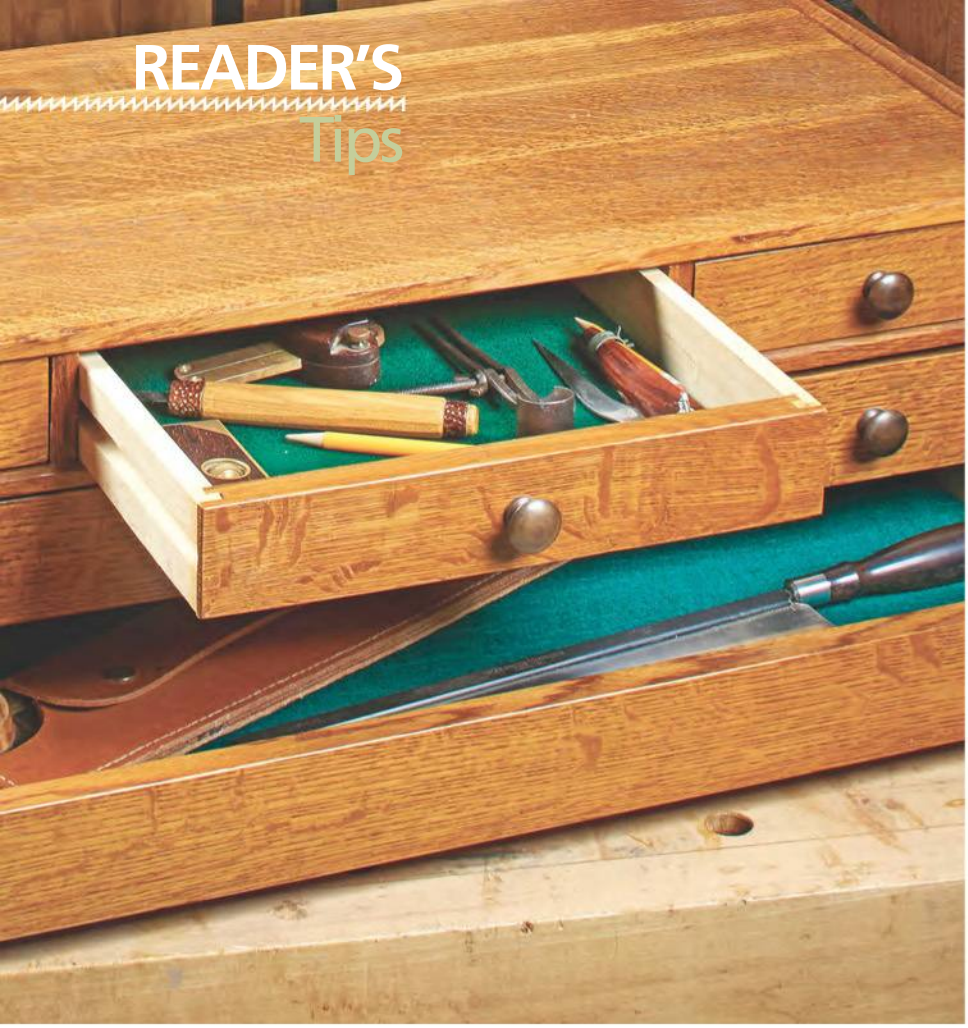

Four-Step Drawer Liner

Well-made drawers always bring a project to the next level. It's rewarding to open a drawer and be greeted by a clean, locking rabbet joint, and there are a few things that transform a cabinet from a hunk of wood to a piece of furniture quite like an array of knobs (aside from the finish perhaps). Yet there's one part of a drawer that often gets overlooked: the bottom.

For many people (myself included for a while) a plywood bottom is enough. However, a nice drawer liner isn't just for the looks — there are some benefits even in a shop cabinet like the one you see above. First off, the felt keeps the tools from sliding around in the drawer. Second, it makes cleaning the drawer a lot easier (as long as you have a pull tab). All you need to do is pull out the liner, blow out any dust with an air hose, then wipe the drawer bottom and put everything back.

Pull Tab. A simple piece of folded painter's tape makes a great pull tab for easy drawer cleaning.

You can see the steps I took to make the liner to the right. I used a piece of posterboard as rigid backing, so that was first to be cut. After cutting an oversized piece of felt as well, I coated one side of the posterboard with spray adhesive. Before laying on the felt, I folded a small piece of painter's tape in half and stuck it to the posterboard; this would be the pull tab. To finish up, I laid the felt onto the posterboard, rolled it out, and cut it flush.

Jordan Harper
Altoona, PA

Posterboard Back. Begin by cutting a piece of posterboard to size. This piece will act as a backer for the felt.

Spray Adhesive. A coating of simple spray adhesive works well to adhere the felt to the posterboard.

Roll On. Apply an oversized piece of felt to the posterboard, then roll out any bubbles and waves with a J-roller.

Trim Flush. Use a wheel cutter to trim the felt to final size. A ruler makes a good straightedge to keep the cut flush.

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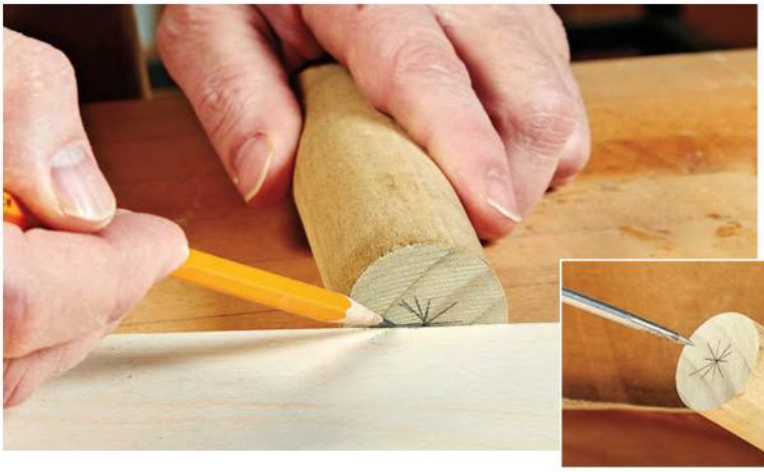


Layman's Marking Gauge

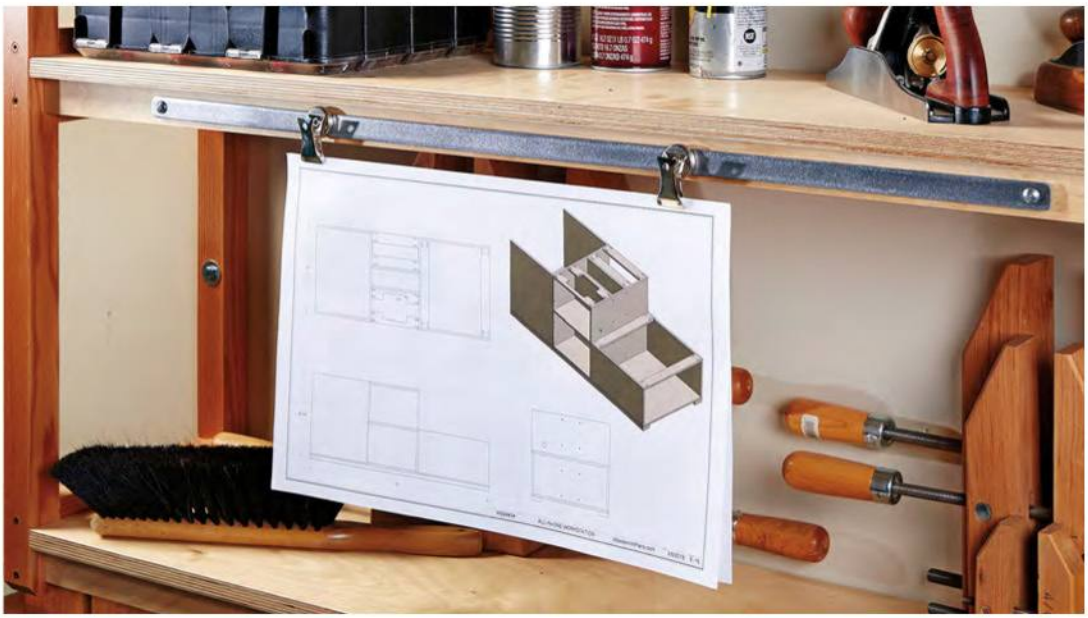
Marking gauges are useful layout tools, and there's plenty available on the market. However, if you need a marking gauge on the fly, or if you're looking for an easy, shop-made option, there's a simple way to make a rudimentary marking gauge in no time.

The gauge I made begins with a dowel rod. In this case, I went with one inch diameter, but any size larger than ¾" should work. First, mark out the centerpoint on the dowel. This can be done as you see in the upper left photo. With a piece half the dowel's thickness, I strike a line across the end, turn the dowel, strike another line, and repeat until I've created an asterisk on the end.

I then use an awl to make a divot in the centerpoint and drill out a pilot hole. A screw acts as the cutter, and I chose a pan-head screw for its broad, thin head. In my opinion, #8-32 is the best kind of thread to use for this screw as well. While the gauge doesn't matter much, a 32-thread screw will move 1⁄32" with each full rotation, making it easier to dial in exactly. Once you've chosen your screw, drive it in to complete the gauge.

Roger Akron
Bardstown, Kentucky

QUICK TIP



Banding Strap Organizer. *Harrold Black* of *Charleroi, PA* has limited shop space, so he needs to make the most of it. To make sure he has his plans where he needs them, he's mounted banding straps around his shop. Magnetic clips make it easy to hang the plans where they're needed — plus banding straps are easy to find at the hardware store or in the scrap bin.

QUICK TIP

Replaceable Vise Face. *Sam Ritchie* of *Shawnee, OK* uses rare earth magnets to make replaceable jaw faces for the vise on his bench. The magnets glued into these wood faces hold them tight to the jaws of the vise. They make removing and replacing jaw faces a snap when he needs something more forgiving to hold a workpiece.

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Corner Sanding Block

Depending on the shape and size of a workpiece, creating rounded corners can be a challenge. The band saw works great to remove most of the waste, but somebody has to clean up those blade marks.

I came up with the sanding block you see here for just that. It's two pieces of plywood: one large one that keeps the sanding edge square to the corner and one that's half its size that does the sanding. I just face glued these, but before doing that I cut a groove in the larger piece in front of where the smaller one would sit (inset photo). This lets the sandpaper extend across the entire edge, plus it provides some dust relief while you're sanding. To use the block, just cut a piece of adhesive-backed sandpaper to fit on the edge, sand, and replace the paper as needed.

Mike Stuart
New Brighton, Minnesota

QUICK TIP

Table Saw Standoff Block. *Ed Torrez* of *Live Oak, FL* uses the standoff block you see above to prevent small pieces from getting trapped by the blade. The block is plywood with a magnet installed in the bottom face. The magnet holds the block in position against the table.

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QUICK TIPS

Sanding Pad Cleanup. *Keith Hoffman* of *Afton, MN* likes to keep around a few extra toothbrushes for cleaning his sanding pads. A bit of naptha or paint thinner on the brush helps dissolve any resin. By attaching the sander to an active vacuum, any debris can be brushed down the holes.

Hinge Mortise Depth. *Lee Collin* of *Hastings, NE* came up with an easy way to get the right depth on his router when he makes hinge mortises. On a flat surface (and with the bit in place) he sets the baseplate on the hinges and lowers the bit to the surface, as you can see in the photo above.

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ALL About

Chisels, Stones, & Stropping

▲ Sharpening will improve your results with any chisel, though a high-quality steel will hold the edge for much longer.

One of the most important aspects of a chisel is the edge. While we often mention how important it is to keep a good edge on your hand tools, it's not often we stop to focus on the tools needed to get that job done. Here we'll explore the specifics of keeping a chisel in shape.

STONES & STROPS. There's plenty of tools to sharpen a chisel, but here we'll look at a few traditional options: oilstones, waterstones, and leather strops. These three kinds of tools have helped to hone chisels (and other blades) for centuries. Despite that, these sharpening methods still benefit from modern innovations, whether it's synthetic stones or abrasive honing compounds

Written by: Rob Petrie

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▲ When you begin sharpening, a honing guide is vital. This tool will keep your chisels (or plane irons) at the proper angle while you work on the edge.

SHARPENING STONES

Chances are you've seen sharpening stones before, whether you own a few or not. There are two traditional kinds of sharpening stones: oilstones and waterstones. As the names imply, they use oil and water as lubrication respectively. However, there are more differences than just that.

▲ Mineral oil or synthetic honing oil lubricates oilstones, making for a cleaner edge and preventing the minute metal filings from clogging the pores of the stone.

OILSTONES. All stone is porous, but oilstones have the finest pores of any stone. These pores are densely packed, which gives oilstones their high grit. They come in a wide variety as well, from low-cost, coarse synthetic stones to expensive, translucent Arkansas stones.

In general, you'll want to stay away from cheap options. This is one of those cases where cost does dictate quality. However, not all synthetic options are bad: the crystolon and India stones shown below are fine choices. They're made from bonded abrasives and won't break the bank, but they usually come only in coarser grits.

Arkansas stones are natural oilstones (quarried in Arkansas, oddly enough), and are my preferred type of sharpening mineralogy. These stones (the translucent ones in particular) are incredibly hard and quite high grit. There's little to no chance of one of these dishing out over time, and since oil is the lubricant, there isn't a risk of my chisel rusting if I don't dry it completely after sharpening. However, the high grit means I reserve my oilstones for keeping my sharp tools sharp. For work on blunter chisels, there's a better choice of stone.

WATERSTONES

To those outside the spheres of modern tool sharpening, "waterstone" may evoke images of a knight sharpening his sword with a whetstone. This has become a bit of a misnomer — "whet" is an archaic word for sharpen. What he may have actually used was a waterstone.

A waterstone has larger pores than an oilstone. For this reason,

▼ Crystolon and India stones are good options for synthetic oilstones, while hard black and translucent Arkansas stones are excellent natural options.

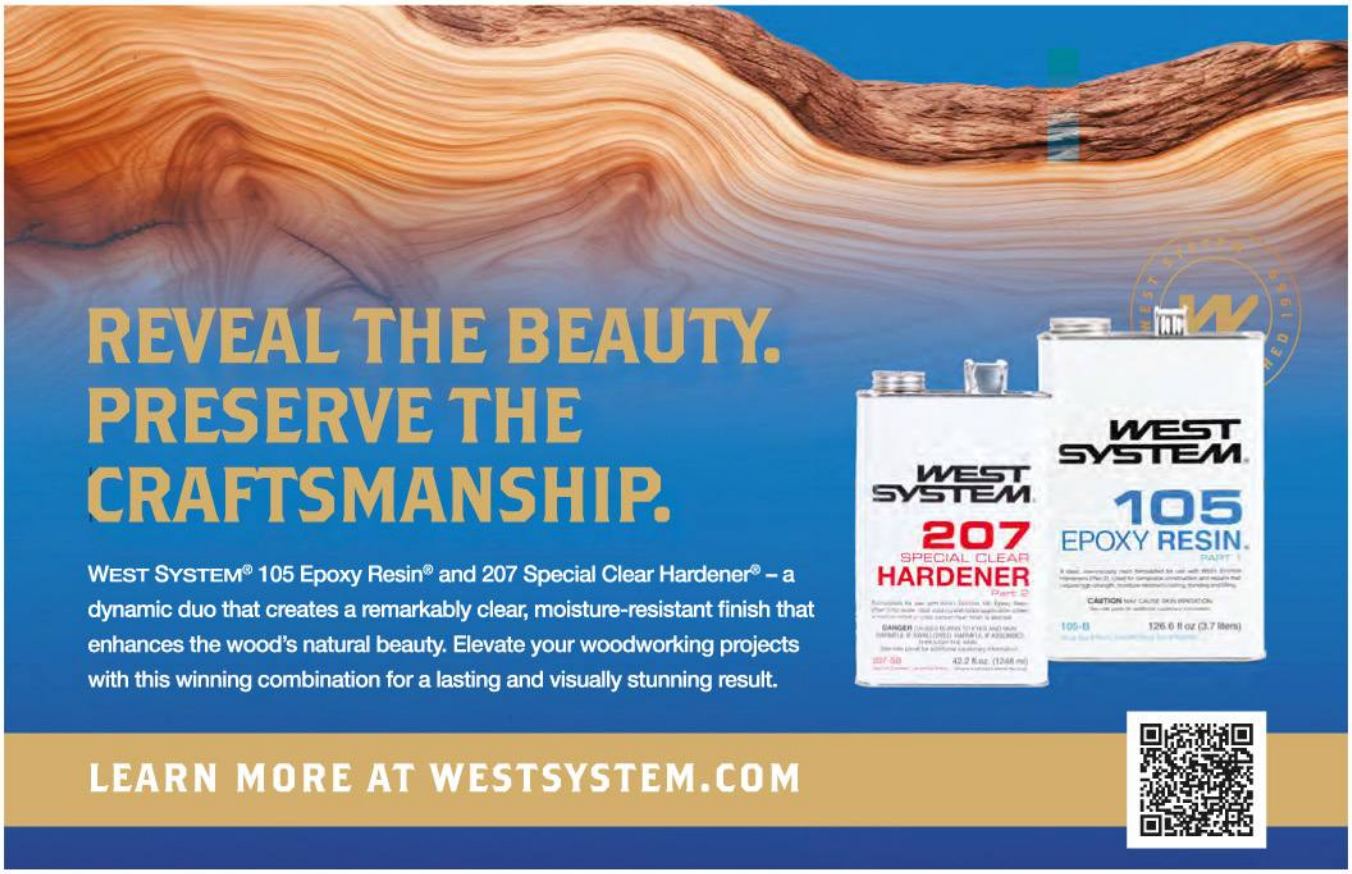
▲ Waterstones need to be soaked. The water seeps into the pores and saturates the stone — once the bubbles stop coming out, it's ready to go.

▲ Synthetic waterstones, like this one, offer a coarse and fine stone in one package.

◀ Natural waterstones often retain their quarry marks along the edge and underside.

it needs to be soaked in water to lubricate it (photo above), and it has a higher friability than an oilstone. That means that a waterstone will wear down over time. Waterstones will form troughs down the center where the chisel (or plane iron) has, in essence, eroded the stone, but these can be corrected by regularly flattening the stones.

The advantage to waterstones is that they work quite quickly. In addition to the lower grit, wearing away quickly also means they stay abrasive. Waterstones are a great tool to keep around for fixing up old chisels, or sharpening ones that could use a little extra work. Additionally, they tend to be cheaper than natural oilstones.



▲ Lightly stropping tools like chisels and plane irons after every session will keep a sharper edge, meaning you'll have to get out the stones less often.

▲ A strop is often just a piece of leather attached to a block of wood, with a smooth and suede side. Honing compounds will increase the effectiveness of stropping.

▼ Many honing compounds come in wax-like sticks, while others are a paste like you see on the next page.

STROPS

Although many woodworkers know about the benefits of sharpening with stones, not as many seem to make use of strops. As with waterstones, the popular idea of a strop seems to come from movies: the cowboy walks into the barber shop, the mustachioed barber swipes his straight razor up and down a long, broad strip of leather. A gunfight probably ensues. While I'm not qualified to speak on the specifics of historical hairdressing, I can say that my strops look a bit different.

STROPPING TOOLS. What I use to strop chisels (and plane irons, or any other blade in need) is what you see above: two pieces of leather glued to a block of wood, one side smooth, the other suede. The various compounds you see make the honing more efficient. The compounds range from abrasives like aluminum oxide and chromium (green stick) to micron-sized diamonds in a paste (white jar above). Although stropping with a compound will get you unparalleled sharpness, beware of compounds that are too expensive. Regardless of how high a grit that can theoretically be reached, you're going to find a point of diminishing returns.

As I mentioned at the beginning of this article, the quality of steel matters greatly when it comes to sharpening and honing an edge. All the work in the world won't do any good if the steel is too soft to hold a razor-thin edge, or so brittle that it chips. For example, The yellow chisel on page 12 isn't worth sharpening beyond a waterstone. By contrast, the blue-handled chisel is a decent quality steel (and polymer — not all plastics are equal). It benefits quite a bit from some fine honing.

HONING

Honing with a strop is a simple task: pull the chisel back along the edge of its bevel. It really is as easy as that, but, like any hand technique, it requires putting in the time to build up the muscle memory before it will come naturally.

I start off by applying the compound to the strop (or "charging the leather"). Often, as you can probably tell from the strop above, I'll use an inexpensive compound (i.e., the green stick) to strop the majority of my chisels. The diamond compound, which you can see applied on the next page, is reserved for my paring chisels (and the irons on my smoothing planes). For those tools, I want the very best edge. For the others, it's not quite worth the investment, cost or time-wise.

HONING WITH A STROP. Steps 1 through 3 on the next page show how to strop a chisel. Step 1 shows applying the compound, as I mentioned earlier.

Honing compounds are abrasives in a bonding agent, so they can cause a bit of irritation if left on your skin.

After that, it's a matter of finding the bevel edge. Begin by resting your chisel on the "nose" of the bevel (Figure 2). Then tilt it down until you make full contact. Once you do, draw the chisel back across the strop (Figure 3). Unlike sharpening on a stone, you'll actually be going with the edge rather than against it. Repeat this for a dozen passes and you'll polish the edge to a mirror-sheen.

WHEN TO STROP. Although I've treated stropping as the last phase in sharpening so far, the truth is that most of my stropping is an everyday task. Stropping has little effect on a blunt edge, but does well at maintaining an edge that is already sharp. For that reason, it's a good way to keep a keen edge in shape. I try to strop my tools before or after every use (which is why I go with the inexpensive green stick most of the time). Even if I'm feeling lazy, stropping without any compound is better than not doing it at all. In the end, it spreads out the half hour I'd spend sharpening on one day to a minute or two each day.

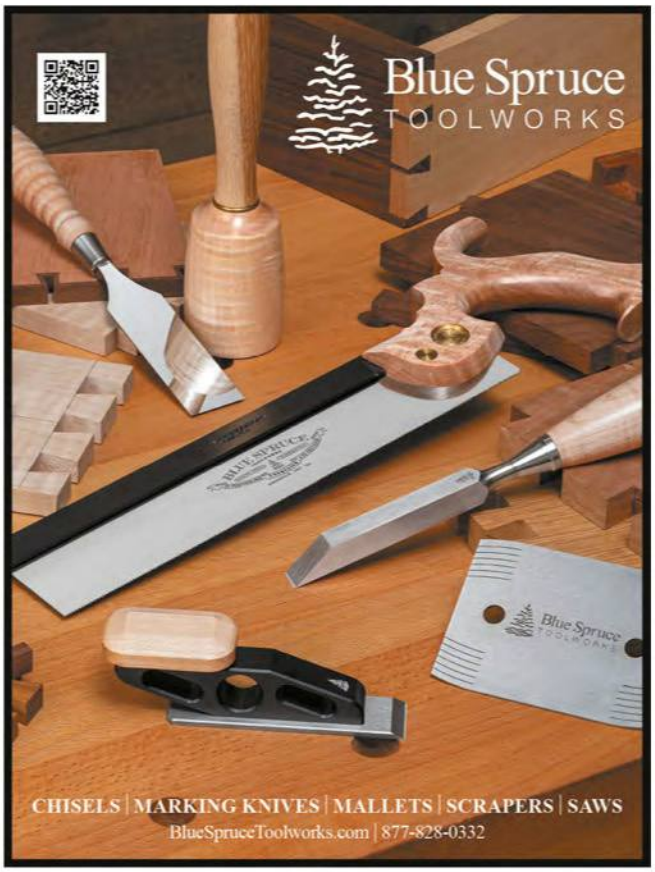
No matter the task, having the right tool for the job is a necessary ingredient. Thankfully, the tools you need to keep a good set of chisels in shape aren't too expensive, especially relative to many of our woodworking paraphernalia.

Additionally, these techniques can go a long way in improving a lower quality set of chisels. There are a number of companies that produce relatively inexpensive chisels with decent quality steel, yet they have the stereotypical "cheap" appearance. If sharpened properly, one can work as well as many far more expensive options – if you turn a new wood handle, no one would know the difference. W

▲ Spread the honing compound evenly across the strop. Honing compounds come in various grits for coarser and finer honing.

▲ Begin by laying the chisel down with the edge raised, resting on the crest of the bevel. Lightly press the tip of the chisel down until you fell the bevel making full contact with the strop.

▲ Pull the chisel back across the strop to hone the edge. As you repeat the action, it'll get easier to find the bevel angle quickly. If you hone consistently, ten to fifteen passes should be sufficient.



Hand-Cut Dovetails

▼ A few reliable layout tools alongside a sharp saw and chisel are all you need to start hand-cutting your own dovetails.

Dovetail joints have always been a favorite of mine. While there's certainly more than a little know-how involved in routed dovetails, it's the hand-cut kind that always grabbed my attention. I imagine it's similar to why some people like to run for hours at a time — there's enjoyment simply in accomplishing a thing that isn't easy.

In the next few pages, we'll go through my method for cutting dovetails. I certainly didn't invent it, but it's the one I've learned and worked on. I begin with the pins, then move to the tails, but that's simply a point of preference. The key is that whichever one is made first is used to directly lay out the second one. This ensures that your dovetails will mate with your pins, despite any variation that might be in them.

Written by: Rob Petrie

LAYING OUT THE PINS

Check for Square. Before laying out the pins, check that the boards are square and flat along the ends. If they're uneven or not square, plane them down.

Baseline. Laying out the pins begins with a baseline. The width here equals the thickness of the tail piece. I first mark the thickness with the actual piece, then make a more defined line.

Another point of preference is chopping out the sockets with a chisel. I enjoy it, but it is arguably more effective to cut most of the waste out with a coping saw, then finish with a chisel.

One final point is to use a marking knife or marking gauge. I always use a pencil line to dial in the layout (and for visibility), but I use a marking knife (or gauge) to make an actual line. This also means that later, as I remove the final waste from the socket, I'll have a mark to register my chisel in. In my opinion, that scored line is the key to a precise dovetail joint.

MAKING THE PINS (CONTINUED)

Pin Locations. When establishing pin locations, first mark out their spacing across the end corner. Next, connect those marks to the baseline with a square.

Pin Angles. To lay out the angles of the pins on the board's end, use either a bevel gauge or a dedicated dovetail guide to transfer the pin lines across the end grain.

Opposite Face. Use a square to transfer the pin lines over to the opposite face from the one you began on. Connect these lines down to the baseline with a square.

Marking Gauge. A marking gauge is a great way to establish a score mark in the baseline. This will give your chisel a physical register when you chop out the waste later on.

Marking Knife. A marking knife is useful when scoring across the shorter layout lines of the pins. If you have a single-beveled knife, face the bevel toward the waste.

Establish the Sides. Use a dovetail saw (or another back saw) to cut in the sides of the waste. The goal here is to get as close to the layout line as possible without sawing into it.

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MAKING THE PINS (CONTINUED)

Chop Down. When chopping the waste out of the socket, first chop down just in front of the baseline to sever the fibers and prevent splitting as you clean out the socket.

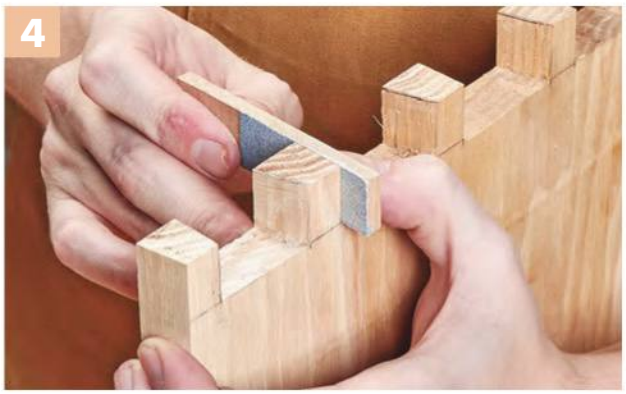
Remove Chips. Chop in from the end to separate and remove the waste. Cut away half the waste in a socket, then flip the board and repeat on the opposite side.

MAKING THE TAILS

Transfer the Pins. After marking out the baseline, transfer the pin locations directly onto the tail piece. Use a square to extend these lines across the end of the tail piece.

Opposite Face. Use either a bevel gauge or a dovetail guide to finish out the tails' layout on the opposite face. Follow this up by scribing in kerfs with a marking knife.

Sawn Ends. With the layout in place, remove the waste as you did in Steps 8 through 10 with the pin board. The chunks of waste at the edges can be removed by crosscutting.



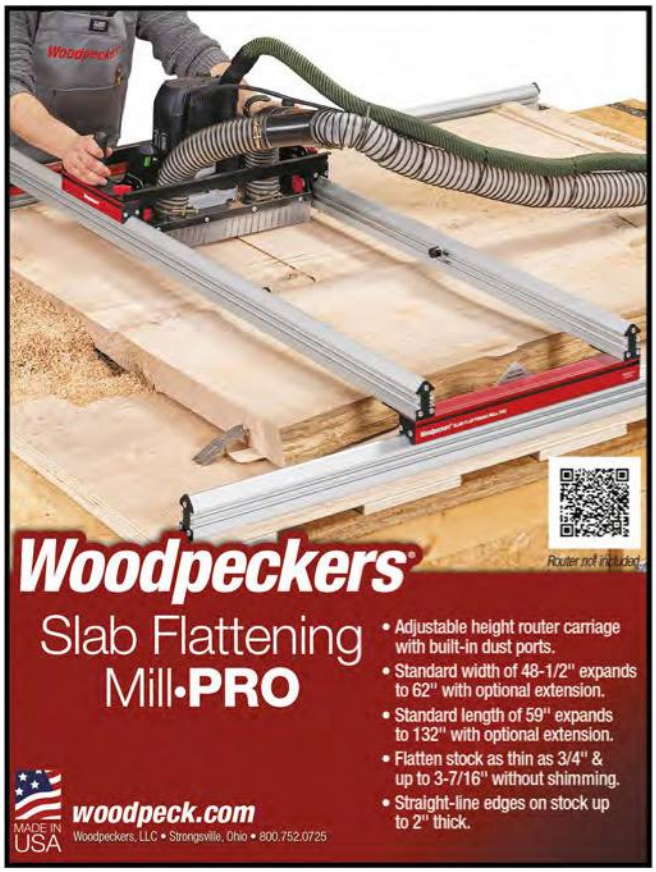
A Little Sanding. A small, narrow scrap of wood with a bit of adhesive-backed sandpaper makes a good sanding tool for the cheeks of the pins and tails.

FITTING THE JOINT

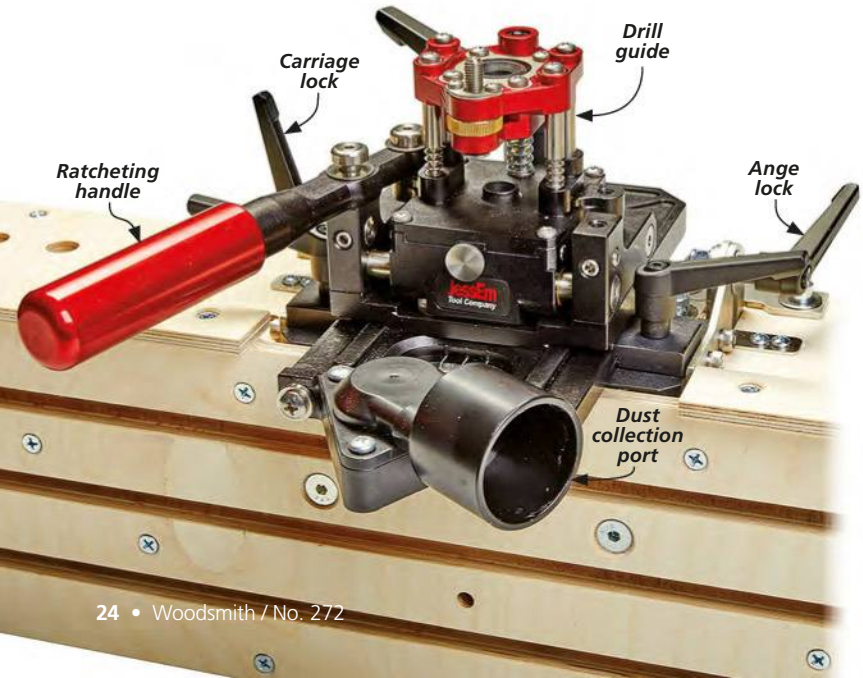
Test & Mark. After sanding down the sockets, dry fit the pin and tail boards together, then mark any sticking points by shading them with a pencil.

Pare Away. From here, the only thing left to do is test fit and pare. Remember: it's easier to take wood away than put it back! Once finished, the joint can be glued up.

▲ Dovetails are a strong and striking joint. They are unparalleled in terms of mechanical strength, and, when used on a corner, a crisp, clean dovetail takes center stage on any piece of furniture.



Pocket Mill Pro



I can't deny, there's a part of me that never did stop getting excited about cool new toys. Over time that changed at some point from toy cars and *LEGO*s to power tools, chisels, planes, and all kinds of accessories. In the same vein though, there's a part that never stopped being envious of others' toys. In this case, it's the "Pocket Mill Pro" from *JessEm* that you see above.

This one was a find from Phil that he let me borrow, and I must say, the boyhood envy has kicked in a bit. It's fun to use, it has a creative design, and it can make a number of operations in the shop considerably more efficient. All in all, I ended up liking this new tool quite a bit.

◄ The "Pocket Mill Pro" has an optional plywood workstation available, featuring dovetail tracks to work with Microjig's dovetail track clamps.

Written by: Rob Petrie

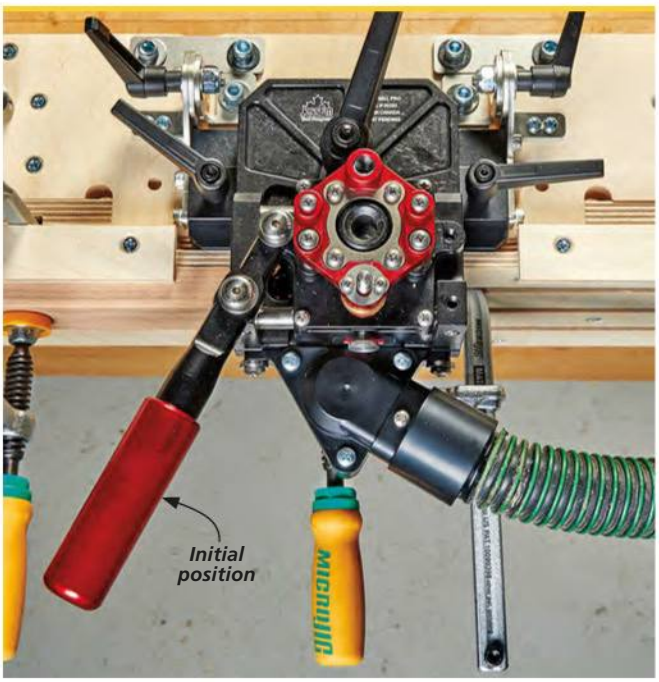
LOOSE TENON JOINERY. To begin, this is a tool for loose tenon joinery. As I'll discuss a bit more later, loose tenons are an effecient alternatve to classic mortise and tenon joinery (which many may be familiar with from *Festool*'s "Domino Joiner"). The "Pocket Mill Pro" however offers some benefits beyond the usual routed loose tenon joinery.

SETTING UP THE MILL. In the photos you see here, we're using the workstation that *JessEm* includes to be used alongside dovetail track clamps (from *Microjig*). This is an additional product sold alongside the mill, and it was tempting to think of a way to recreate it. However, I found it was a bit more elaborate than I first thought. Given the price of Baltic birch, the price tag seemed more reasonable when I considered the time investment required to recreate the workstation.

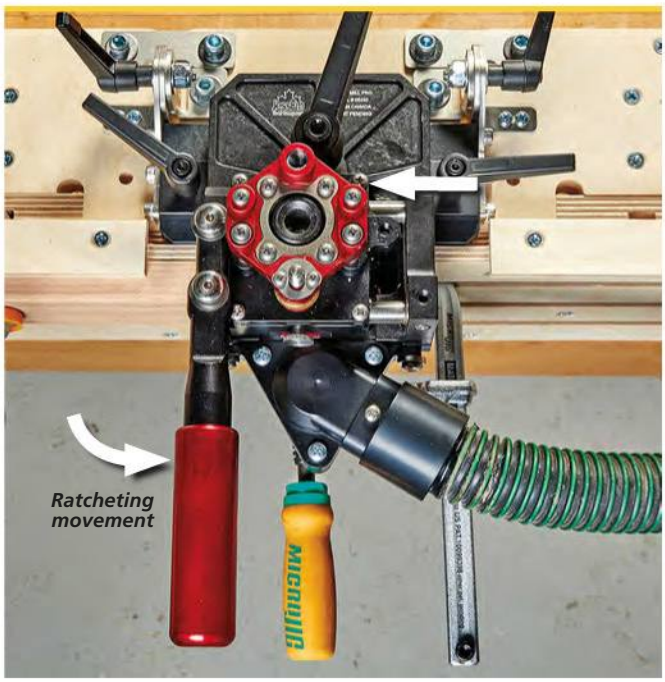
Using the mill with the workstation is pretty intuitive. Dovetail track clamps hold the workpiece in place, while the base locks in and adjusts to the thickness of the workpiece. Etchings allow you to line up the centerpoint and ends of a ¼" mortise with your layout lines. The real draw of this tool is the ratcheting carriage.

▲ The base of the mill has a locating guide that slides and locks to accommodate pieces of various thicknesses. It shows the centerpoint and ends of the mortise. Once it's been set, the carriage slides in overtop.

RATCHETING CARRIAGE. There's a gimmick to this tool, and that's the ratcheting carriage. When Phil first showed us how it was used, there was a collective nod and sigh of, "Oh, right. Makes sense." As you push the lever that moves the cutting bit back and forth across the mortise, the carriage ratchets down. The bit removes only a small amount at a time, making for a clean cut. It's a simple idea executed well.

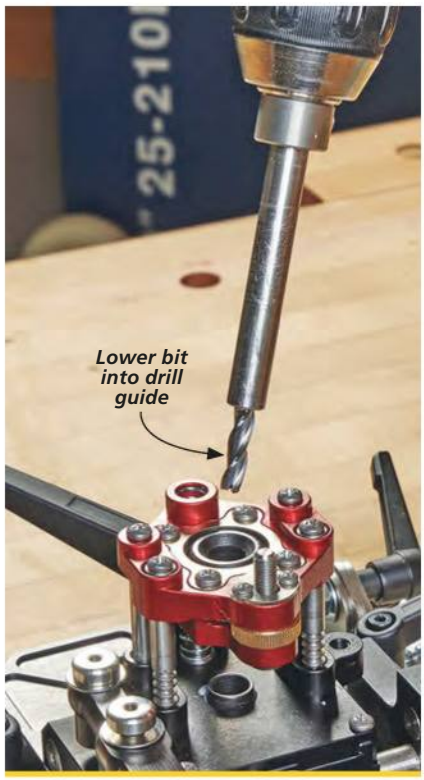


▲ A bit is inserted in the drill guide in the initial position. After starting the drill and driving it in, push the lever to move the carriage across the mortise, clearing away a layer of waste.



▲ Each time the carriage moves across the mortise, a ratcheting mechanism slightly lowers the drill guide. It takes only a few seconds to create a mortise this way,

▲ These bits may look like twist bits, but they have solid carbide cutters like router bits to make mortises.



DRILLED MORTISE

As someone who began with construction and moved into fine woodworking, I appreciate the idea of completing a mortise and tenon joint with only a hand drill. Though the concept is a bit of a novelty, it's turned out to be an effecient method.

USING THE MILL. The "Pocket Mill Pro" comes with the 6mm endmill bit you see above. While the bit looks like a standard twist bit with a long collar, the cutters are actually shaped akin to a straight router bit, giving them the ability to cut both side-to-side and downward. The stop collar can then be adjusted using an Allen wrench.

Using the mill only requires you to slide the bit into the drill guide, then move the lever back and forth. As long as you have the mill positioned, the guide will carry the drill across the mortise and drop it to the proper depth.

You won't need much muscle here. Just as much pressure as you'd use to drive a screw into a pilot hole is sufficienct. As you move the lever back and forth, buttons on either side of the carriage cause the drill guide to ratchet down toward the workpiece. Once the the drill lowers to your stop (whether you set it on the guide or use the stop collar), your mortise is finished. Pressing the release button sends the drill guide back up like a typewriter carriage return (lower left photos).

OTHER SETUPS. As you can see on the next page, there's another setup for the mill. The dovetail track clamps from *Microjig* (you can find more on those in issue 271) provide a number of possible setups. Additionally, they allow you to reposition the mill horizontally to cut loose tenons in the ends of longer pieces.

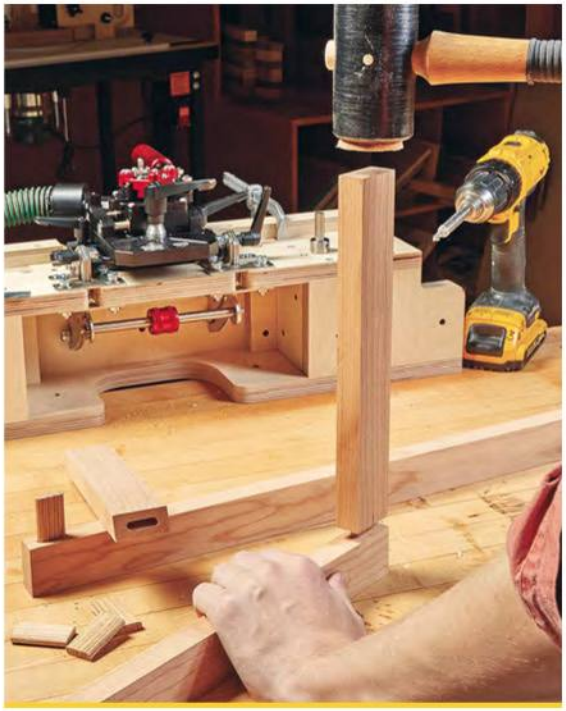
◀ After making the mortise, press the release button (left photo) to release the carriage back to the initial position (photo above).

LOOSE TENON JOINERY

Loose tenons provide a few benefits over regular ones, especially with repeated cuts. They're easier to set up and cut consistently, making them a great choice for frames. You can cut a number of mortises quickly and use the loose tenons to join them without any fussy fitting.

One particularly nice thing about this mill is that it works with *Festool* dominoes. While you can certainly make your own loose tenons by routing

▲ To make mortises in the end of a long board, you can orient the mill horizontally, then position the workpiece on the workstation above.



▲ Loose tenons are an efficient option for frames. Rather than needing to shape a tenon, you only need to make sure the mortises are properly aligned.

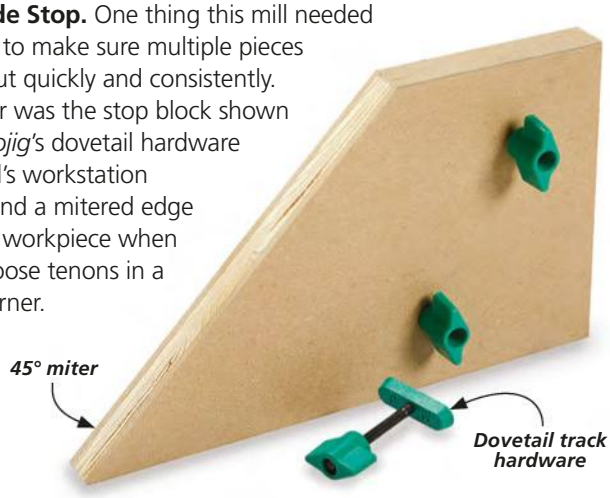
strips with a ⅛" roundover bit (or ¼" for the larger bit on the previous page), it's hard to beat the ease and price of simply buying a bag of dominoes.

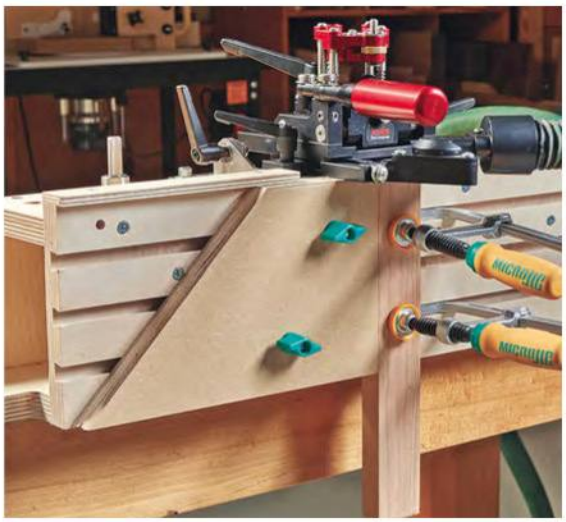
IMPROVEMENTS. There is one addendum I would make on the mill having used it enough now, and that is what you see below. Along with the mill, Phil left a simple stop block (shown in the box below) that he made. It's a piece of plywood with a few pieces of dovetail hardware (shown in issue 268). Take a look to see why it's so effective.

After a bit of playing around, the "Pocket Mill Pro" proved to be a pretty impressive tool. The ratcheting mechanism is a clever device, and being able to use the mill effectively with only a hand drill makes it an ideal addition for woodworkers of all scope. W

POCKET MILL STOP BLOCK

Shop-Made Stop. One thing this mill needed was a way to make sure multiple pieces could be cut quickly and consistently. The answer was the stop block shown here. *Microjig*'s dovetail hardware fits the mill's workstation perfectly, and a mitered edge supports a workpiece when installing loose tenons in a mitered corner.





PET Project

Cat Castle

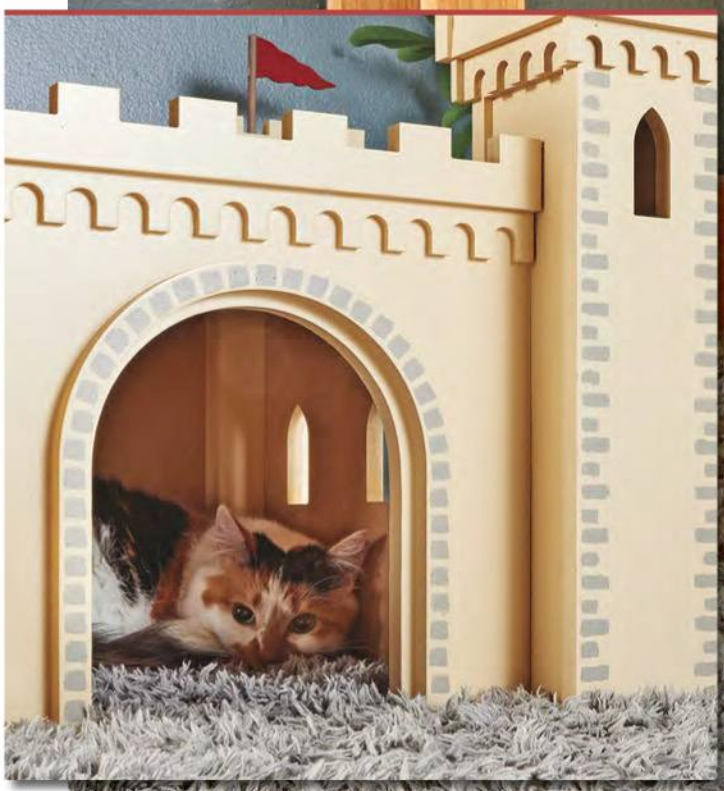
Give your feline friend a fabulous new playhouse. They'll love lording over this project as much as you'll enjoy a weekend of relaxing woodwork.

One large joy that comes from woodworking is making something for someone else. It's wonderful to see your work paid off with a smile. Of course, people aren't the only ones who enjoy a shop-made gift.

As the name implies, this castle was designed with felines in mind. The interior of the keep makes for a cozy spot to curl up, and they love to watch passersby through the windows. Of course, this castle could also make a great house for smaller dogs, or a play set for younger children with the roof panels removed. There are a variety of options, but the real focus of this project is the decorative trim pieces that form the crenellated parapets and the corbels.

To translate the medieval jargon, the parapets are the structures soldiers would hide behind in battle (while crenellation refers to the pattern of the parapet). The corbels, as you may know from other architecture, are the supports beneath the parapets. These pieces are a great example of how much creative trim can add to any project, transforming an MDF box into a miniature castle. Although I'll be using typical woodworking tools here, we're also making available DXF files for cutting these parts on a CNC. Regardless of how you build the project, I think you'll find the resulting gratitude is certainly worth it.

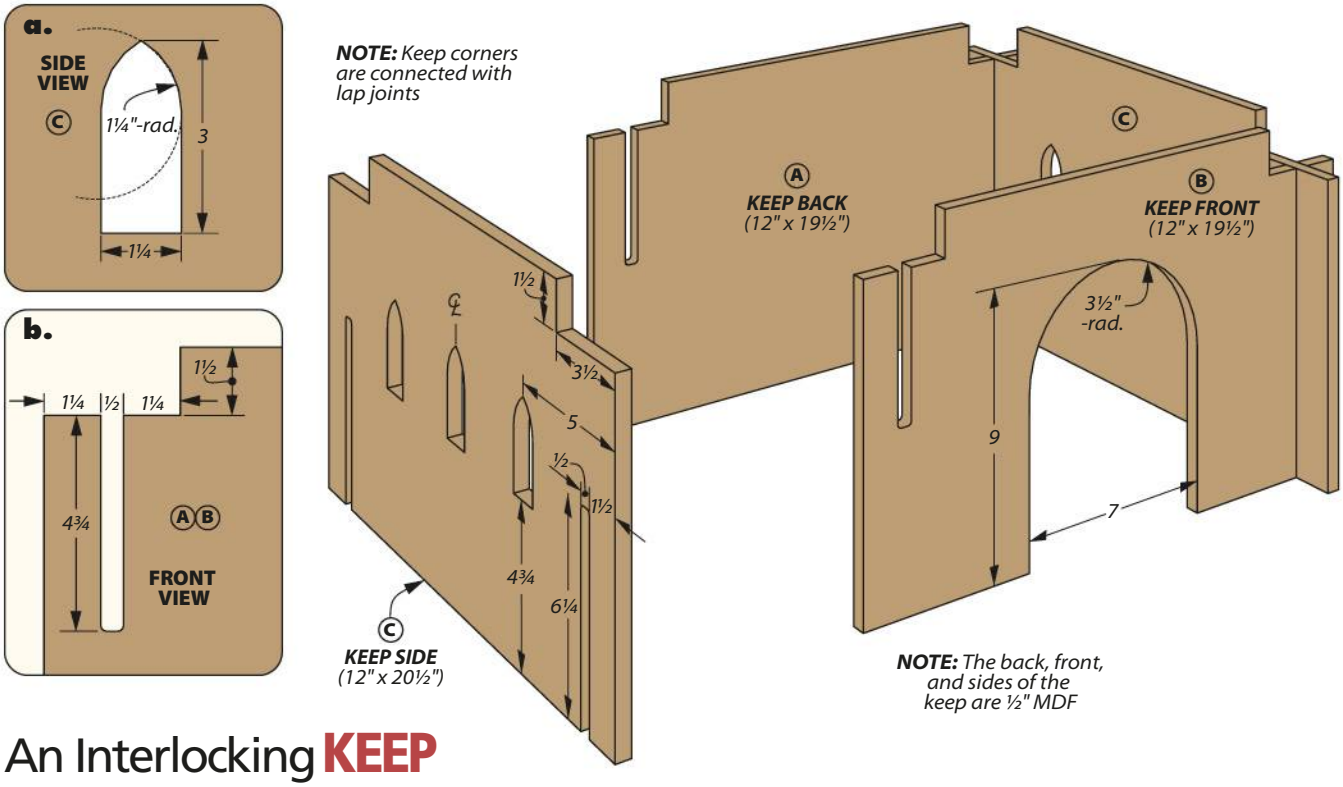
▲ A pair of roof panels enclose the central keep. Finger pulls make them easy to remove, yet the plywood still makes a sturdy perch.



▼ The keep and towers are decorated with routed crenellations above and corbels below, completing the classic look of this castle.

Written by: Rob Petrie; Project Design: Chris Fitch

Illustrations: Becky Kralicek



An Interlocking **KEEP**

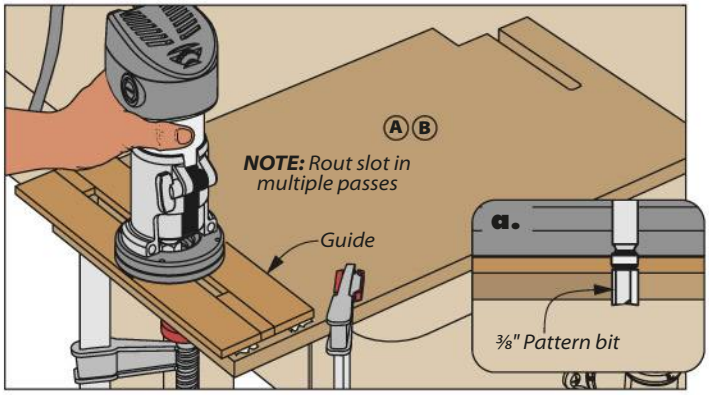
The first thing to address on the castle is building the main body, or "keep," of the castle. As you can see above, the keep is made from four pieces of MDF. These are connected by lap joints (detail 'b'). Additionally, the sides and front will need a little cutting to create the doors and windows. But, first things first: size the pieces of MDF.

LAPPED CORNERS. After cutting the keep pieces to size, next I looked to their joints. I made these lap joints using a router and a set of scraps as a guide (box at right). However, I needed to do a little work at the band saw before that. First was cutting the notches shown in detail 'b' above — with a wide blade it was easy to get a clean cut. I then used a couple of curving cuts through the waste of the slot to remove most of the MDF. The more MDF you get out of the way now, the less you'll have to worry about breathing in later on.

ROUTING THE PORTALS. Next on our keep comes the door in the front, as well as the windows along the sides (detail 'a' above). We've provided patterns (which you can find at *woodsmith.com/272*) that you can use to make templates. I used one template for the doors and another for the windows. The waste can initially be removed from the portals with a jig saw, but be sure to leave a little waste beside the layout lines. Then, you can use a flush-trim bit in your router to make crisp lines that sit flush with the template.

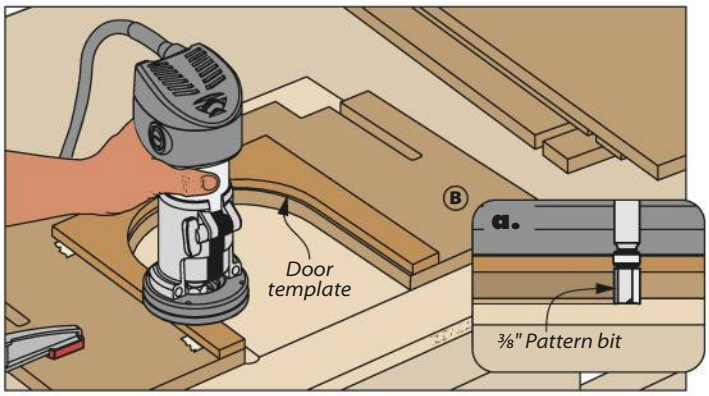
Now, the assembly can be fit together. The slots interlock, allowing you to break down the castle for transportation. As long as the four keep pieces fit together snugly, you're ready to move on.

LAP JOINT SLOTS

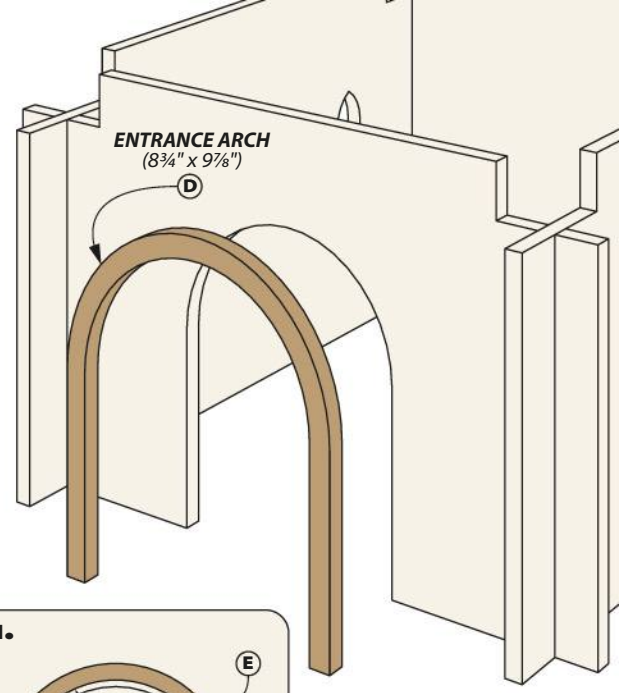


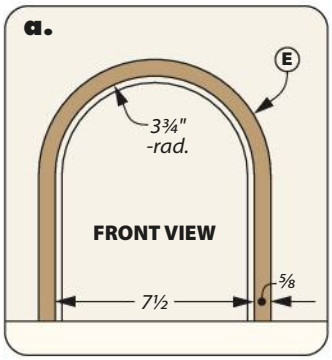
Interlocking Slots. A router with a short pattern bit and a guide for the base make cutting the lap joints slots easy.

DOOR & WINDOW CUTOUTS



Routing the Archway. Use the patterns provided to create templates. The templates will guide your routing.





NOTE: *The entrance arch is ½" MDF*

KEEP DETAILS

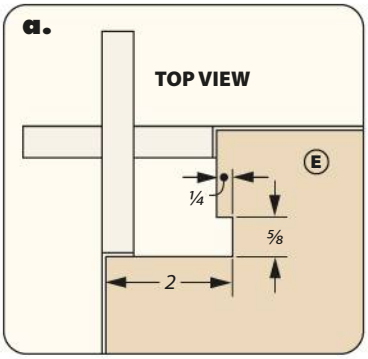
Aesthetics are important, and this castle doesn't slouch on the fine details. To begin some of this work, we'll start with an operation similar to what we just did.

ENTRANCE ARCH. The entrance arch is made quite similarly to routing the portals. As with the door, I first used a jig saw to remove most of the waste from within the arch and free it from the larger sheet. Then I used double-sided tape to stick the MDF to a backer board and routed along a template to clean up the inner and outer radii.

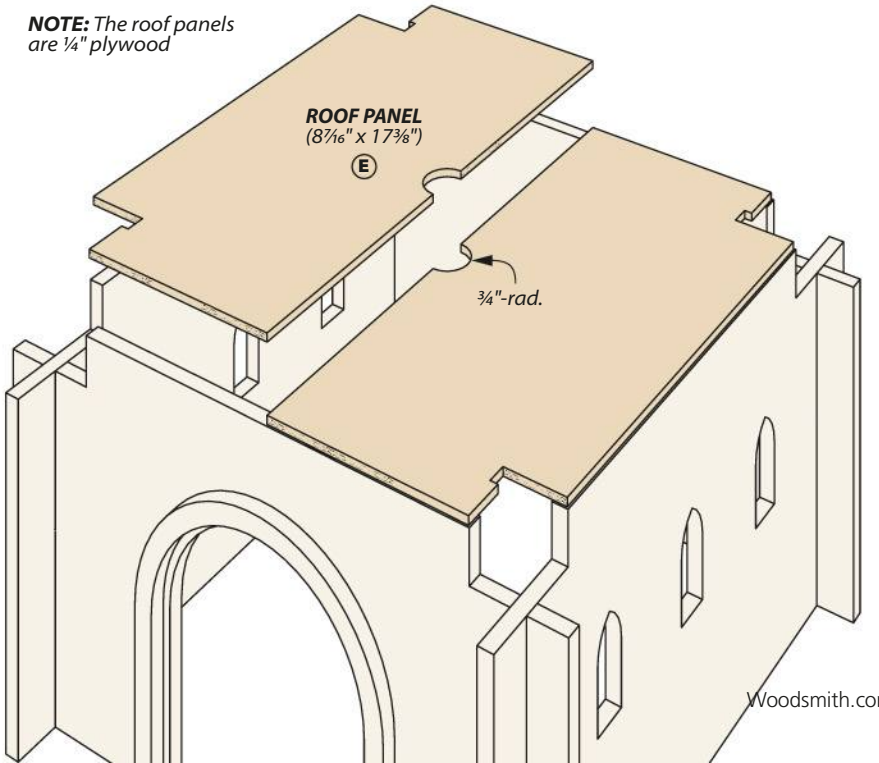
Sticking the arch in place doesn't take much. Apply a little glue to the back of the arch, then press it to the keep front, centered on the door cutout. Given how light this piece is, clamps aren't necessary. I found it easiest to simply hold the arch in place until the glue began to go off.

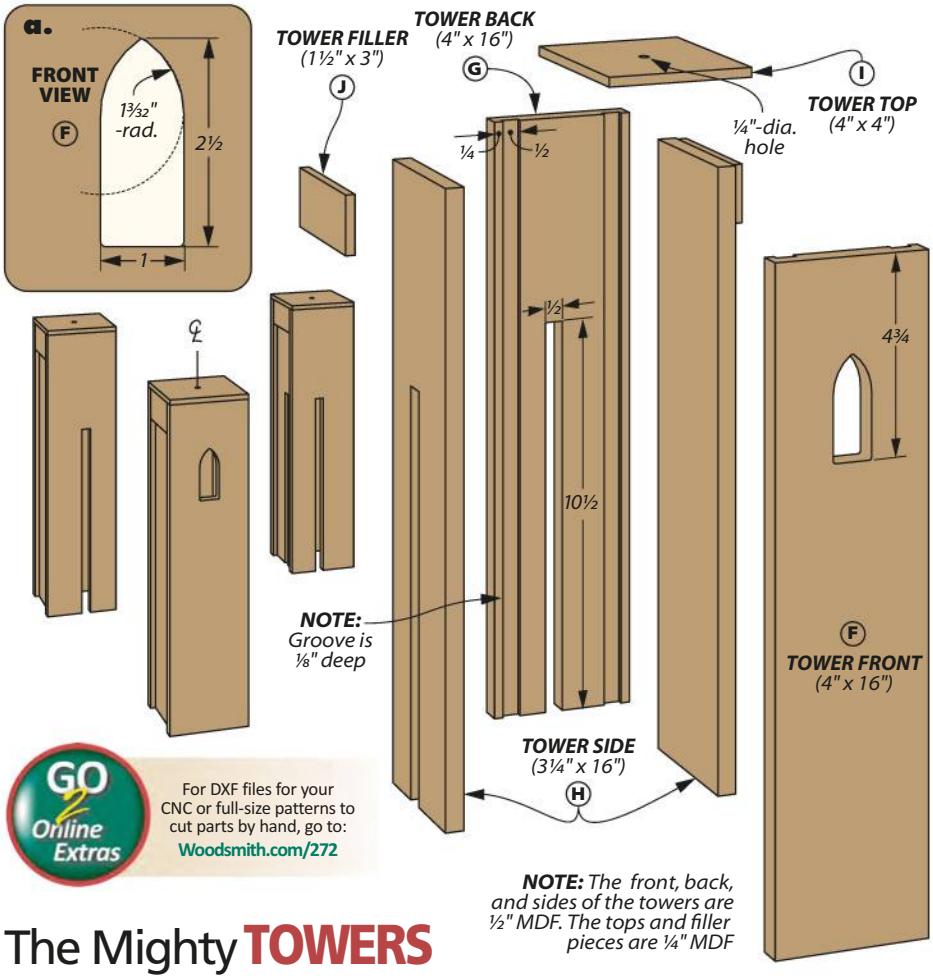
REMOVABLE ROOF. A pair of removable roof panels completes this portion of the cat castle. These panels are plywood. Plywood makes for a stiff and stable cat platform as well as a roof. Before cutting these two pieces to size, I started with one overly wide blank. This allowed me to use a Forstner bit to create the thumb pulls shown in the main illustration below, then I simply ripped the blank in half.

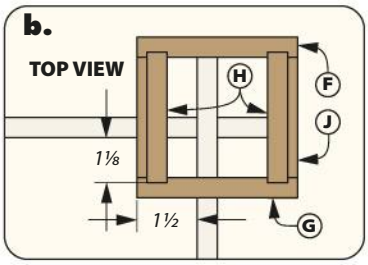
Lastly, to make sure these panels will accommodate the towers you'll be adding next, you'll need to create the uniquely shaped notches shown in detail 'a' below. I accomplished these at the band saw.



NOTE: *The roof panels are ¼" plywood*







GO Online Extras

For DXF files for your CNC or full-size patterns to cut parts by hand, go to: Woodsmith.com/272

The Mighty TOWERS

While your cat may enjoy the rather plain keep assembly so far, There are a few additions that will make this box a true castle.

TOWER WALLS. We'll begin with towers — specifically the walls. Detail 'b' above shows how the tower walls fit together. After cutting the front, back, and side pieces to size, cut the grooves in the fronts and backs that will accept the sides.

Next up are the slots that allow the towers to fit over the keep walls. I made these by routing out the waste, then cleaning up the corners with a chisel. Keep in mind that these slots will only be on the back and inner side piece of each tower.

TOP & FILLER. Two sets of parts remain on the towers: the tops and the fillers. Fit the towers together when sizing these pieces to be sure the fillers are snug and the tops sit flush. After sizing, drill a hole in the center of each top for the banners added later. Finally, you can assemble the towers and slip them over the keep sides.

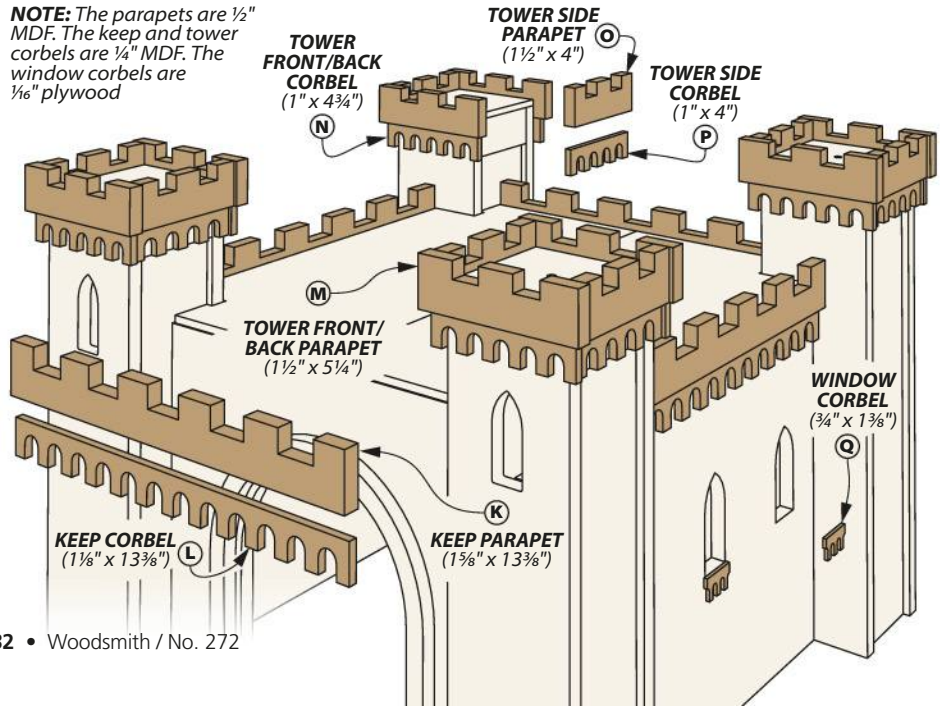
PARAPETS & CORBELS

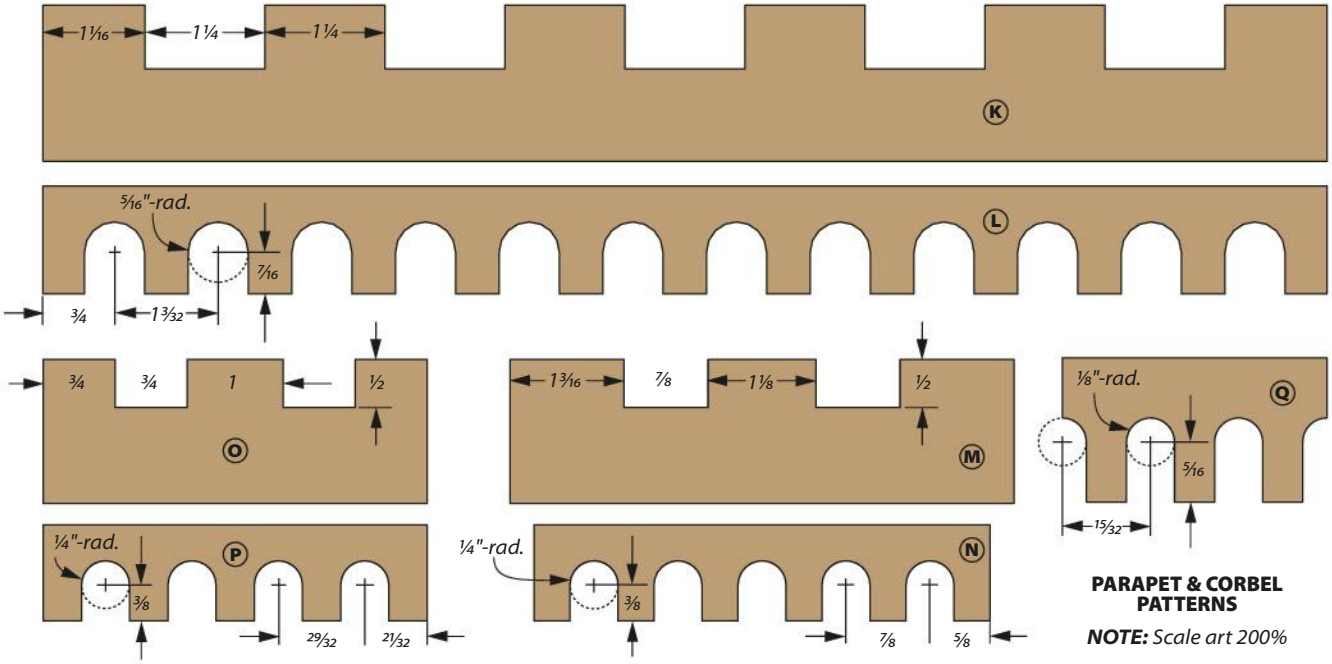
The towers add a lot to the keep, but what will really sell it as a castle are the parapets (the rectangles) and the corbels (the arches). These pieces are shaped trim. While they take a bit of time to make, they're not difficult.

PARAPETS. Although the parapets differ in length, the depth of the embrasures (the gaps) are the same. This means they are created quite quickly with a dado blade and a crosscut sled. After dadoing the lengths of parapets, cut them to fit in their places.

When fitting the parapets on the towers, start by centering the front and back ones over the tower sides, then use them to help fit the side parapets in between. To attach these pieces, I simply use a bit of glue and hold them in place until it sets.

CORBELS. Making the corbels is somewhat similar to the parapets. However, to establish





PARAPET & CORBEL PATTERNS

NOTE: *Scale art 200%*

the radiused ends, I used a Forstner bit at the drill press to create a series of holes in the corbel blanks. Now you just have to take care of the waste in between. You could rout it out, but since I already had a dado blade and sled in place, I narrowed down the dado stack and cut the waste at the table saw. Sizing and attaching the corbels works the same as the parapets.

Lastly, we painted the castle and added the flags you see below. Sources on page 66 show the paint we used, and the box below shows how to make the flags that top the towers. W

Materials & Supplies

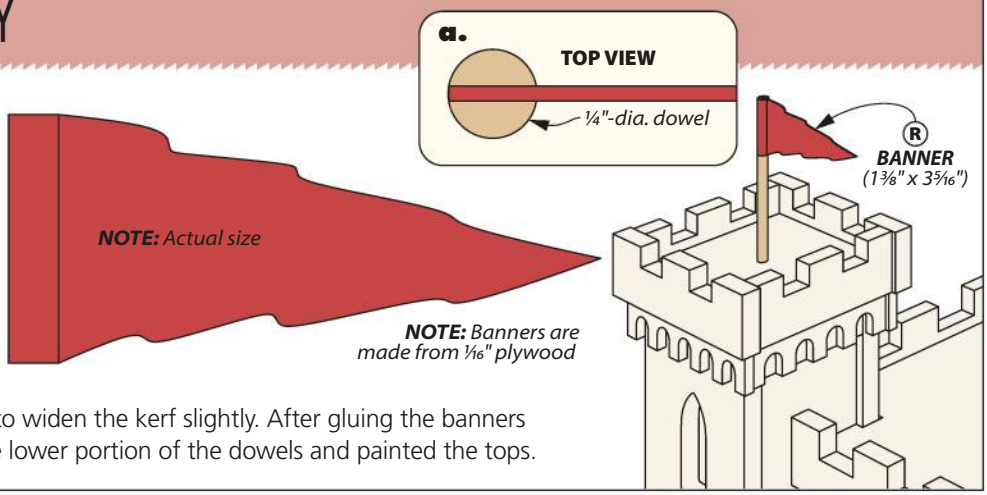
A	Keep Back (1)	1/2 MDF - 12 x 19 1/2
B	Keep Front (1)	1/2 MDF - 12 x 19 1/2
C	Keep Sides (2)	1/2 MDF - 12 x 20 1/2
D	Entrance Arch (1)	1/2 MDF - 8 3/4 x 9 7/8
E	Roof Panels (2)	1/4 ply. - 8 7/16 x 17 3/8
F	Tower Fronts (4)	1/2 MDF - 4 x 16
G	Tower Backs (4)	1/2 MDF - 4 x 16
H	Tower Sides (8)	1/2 MDF - 3 1/4 x 16
I	Tower Tops (4)	1/4 MDF - 4 x 4
J	Tower Fillers (8)	1/4 MDF - 1 1/2 x 3
K	Keep Parapets (4)	1/2 MDF - 1 5/8 x 13 3/8
L	Keep Corbels (4)	1/4 MDF - 1 1/8 x 13 3/8
M	Twr. Fr./Bk. Parapets (8)	1/2 MDF - 1 1/2 x 5 1/4
N	Twr. Fr./Bk. Corbels (8)	1/4 MDF - 1 x 4 3/4
O	Twr. Side Parapets (8)	1/2 MDF - 1 1/2 x 4
P	Twr. Side Corbels (8)	1/4 MDF - 1 x 4
Q	Window Corbels (8)	1/16 ply. - 3/4 x 1 3/8
R	Banners (4)	1/16 ply - 1 3/8 x 3 5/16

- (1) 1/4"-dia. x 24" dowel rod

ALSO NEEDED: *One 48" x 48" Sheet of 1/2" MDF, One 48" x 48" Sheet of 1/4" MDF, and One 24" x 24" Sheet of 1/4" Plywood*

LET YOUR FLAGS FLY

A Hint of Wind. The flags you see here are an opportunity to add both color and a sense of movement. A coping saw or scroll saw is the best way to shape these. To fit the banner in the dowel, make a thin kerf at the top. I used the band saw, but I needed to make a second cut to widen the kerf slightly. After gluing the banners into the dowels, I taped off the lower portion of the dowels and painted the tops.



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Written & Illustrated by: Erich Lage; Project Design: Chris Fitch

▲ The appliance garage provides easy access to often used kitchen items. When not in use, hide them away behind the tambour door.

▲ The cabinet features storage galore — plus heavy-duty drawer slides mounted underneath allowing you to show off the dovetailed hard maple tray.

Hoosier Cabinet

Here's a piece of furniture that was once the workcenter for many kitchens. This streamlined version is just as useful in today's home.

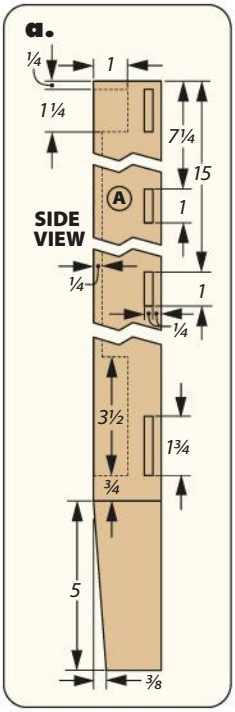
One of the first items my lovely bride and I purchased on our staycation honeymoon was a beat-up Hoosier cabinet. It was a shadow of the fine specimen you see here. But it was fitting for the apartment we had in the old, leafy part of town we lived in.

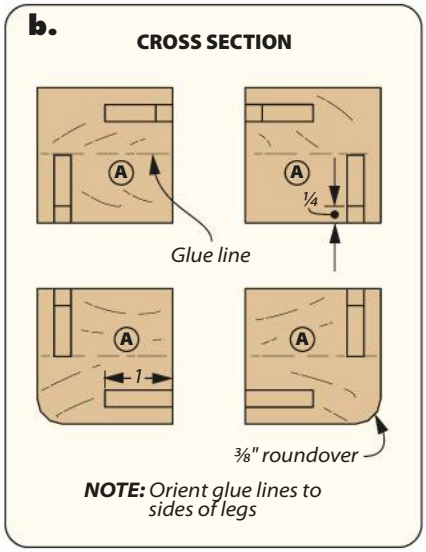
Those apartments (and homes) of that era had very modest kitchens, and were the reason Hoosier cabinets thrived from around 1900 to 1940. There were several manufacturers that made these ubiquitous beauties.

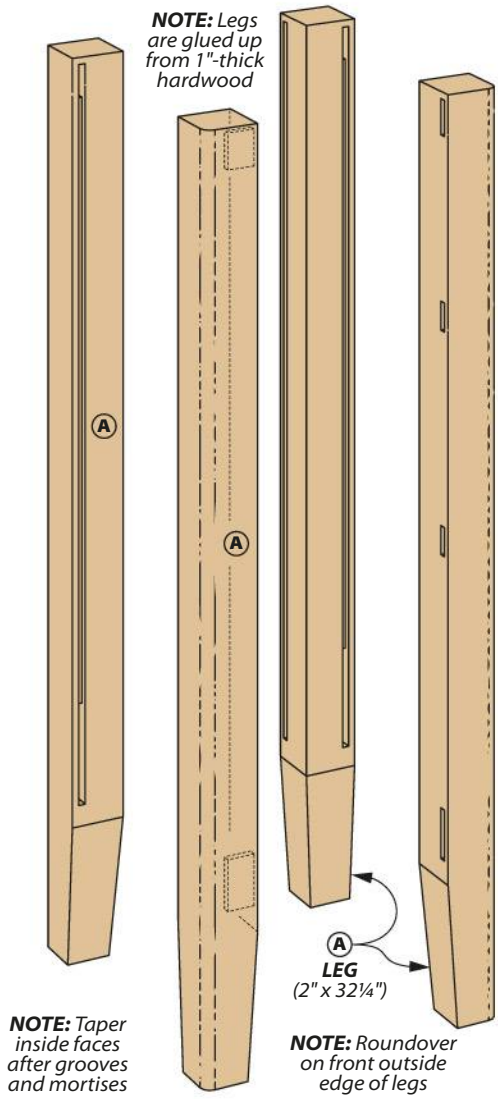
GOOD WOOD. Hickory was used for the base and upper case of this project. (We've split the material list between the two.) As you see in the lower photo, hard maple was the wood of choice for the tray, as well as the drawer boxes.

This version has a design feature that its predecessors lacked — heavy duty drawer slides that mount to the underside of the tray and drawers. Another subtle touch is how the layered sides and center divider of the base eliminate the need for cleats to attach the drawer slides. Lastly, the reeded glass that's shown off in the doors adds a vintage look to the upper portion of the project.

THE HOOSIER YOU SAY. On a related note — research reveals several origin stories for the Indiana moniker "Hoosier," my favorite being someone yelling out "whose ear?" at the end of a knife fight in a bar. Just something to think about as you head to the shop.







NOTE: The configuration of the grooves and mortises on the back legs are mirror images. The mortises in the front inside faces are different

Getting a leg up on the SIDES

The legs of this cabinet are the cornerstones of the project. Their thickness provides stable support for the base (and the upper case). Also, as you'll see on the next page, they hold not only the rails and their panels, but the cleats and interior panels.

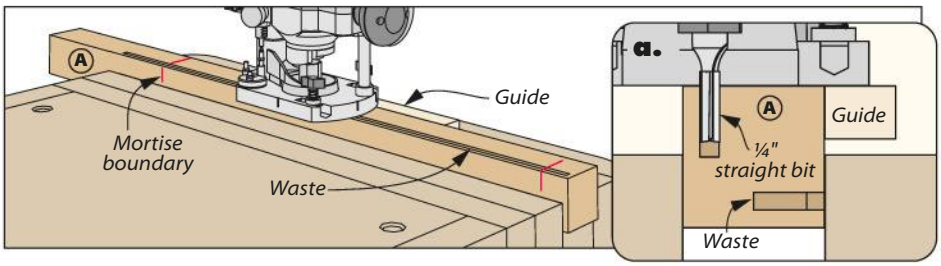
GLUE UP. The legs are glued up from 5/4 material. In the spirit of putting your best face forward, take a little time to orient the best-looking grain patterns to the front of the legs.

As of late, using epoxy to glue up projects is on the rise in the shop here. Epoxy has a longer open time and is easy to clean up with lacquer thinner. It's worth considering on those merits.

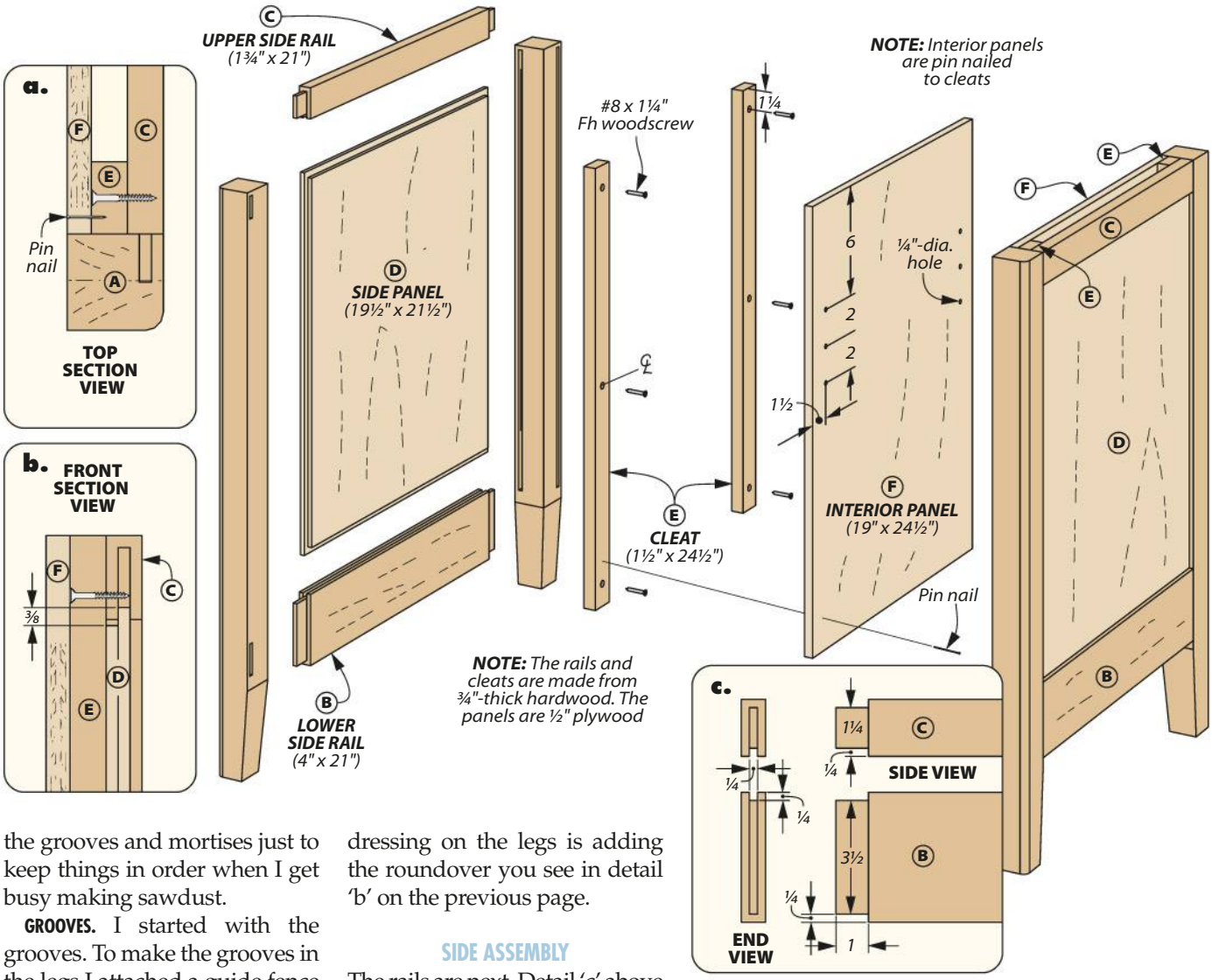
JOINERY. Once the clamps are tucked away, trim the leg blanks to their final size and head to the workbench to focus on the joinery stage. The main drawing above and the details show what you're up against. Moving from front to back, the inside face of the front right leg has four mortises (detail 'a') while the front left leg has only two. These mortises house the tenons of the face frame.

Detail 'a' also shows the combined grooves and mortises that are on the remaining faces. This is where the rails and panels join the legs. Once you've decided on the orientation of the legs I suggest you mark the tops in a manner similar to what you see in detail 'b' above. Often I've drawn the exact layout of

GROOVES & MORTISES



Grooves First. Cut the shallow grooves for the plywood panels first. Then you can rout out the deeper mortises like you see in detail 'a' in multiple passes.



the grooves and mortises just to keep things in order when I get busy making sawdust.

GROOVES. I started with the grooves. To make the grooves in the legs I attached a guide fence to my plunge router base. The box at the bottom of the previous page shows the details.

When the grooves are complete you can start routing the mortises. The mortises in the grooves can be a little long to the inside for better alignment of the parts. Wind this stage up by routing the solo mortises in the front legs. Then square up your efforts with a chisel.

LEGS. Notice in the main drawing that the legs are tapered on the inside faces. The tapers lighten the visual load of the base without compromising its strength. The task was done at the table saw with a tapering jig. Sand or plane the tapers smooth after the fact. The last bit of dressing on the legs is adding the roundover you see in detail 'b' on the previous page.

SIDE ASSEMBLY

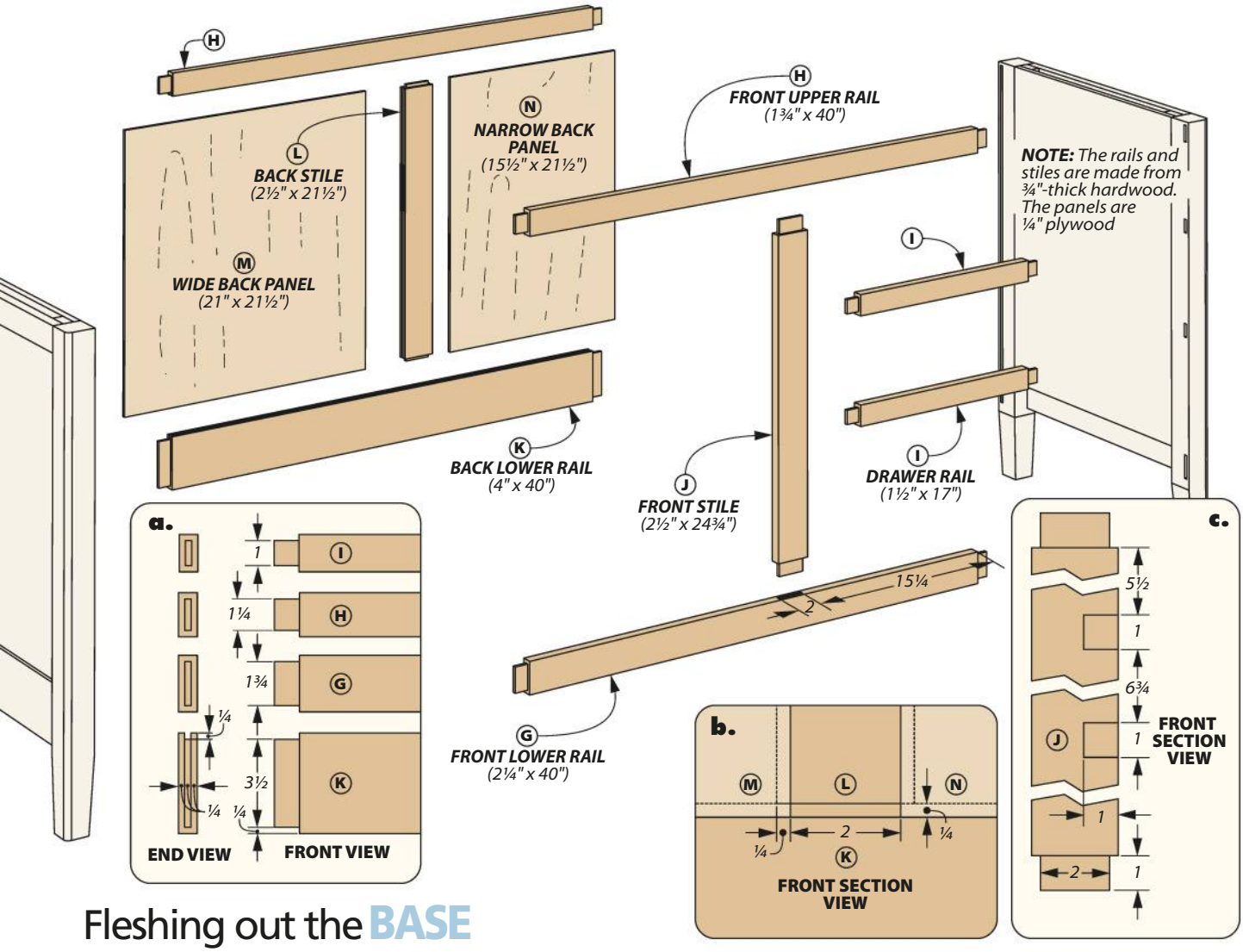
The rails are next. Detail 'c' above shows the groove centered on both boards. Use the rip fence at the table saw to make these cuts. To make the tenons, stick a sacrificial board to your fence and use the miter gauge to support the board while making the cut.

RABBETED PANELS. The last components of this layer of the side assembly are the side panels. Detail 'b' above shows how they fit in the grooves of the rails and legs. First you'll need to cut the rabbet along the edge of the inside face. Then you can glue up the five pieces.

While the sides are curing in the clamps you can make the parts that you'll attach to them. The main drawing above (and detail 'a') shows the right side assembly put together and the left side blown apart so you can see what's going on inside.

It's pretty simple really, there are two cleats screwed to the rails and panel that you just glued up. In this instance the cleats act more as spacers, but the parts are the same size as the cleats used later to hold the bottom and top in place on the base so they're adopted into that family.

After drilling the shank hole and countersinks in the cleats you can screw them to rails (the middle screw fastens to the panels). Lastly, the interior panel on the left side needs a series of shelf pin holes drilled in it. Once that's done both panels can be glued and nailed to the cleats.



Fleshing out the BASE

Up next is making the front and back assemblies. The five boards that comprise the front define the three drawer openings. The large opening is for the tray and shelf that reside behind a door. As you see in the main drawing above, it's mortise and tenon joinery for these parts. The back is made of three boards and two plywood panels. Tongue and groove joinery is on the menu here. Let's start up front.

MORTISES. You can adjust the guide fence on your plunge router to make the mortises required in the front stile (detail 'c') and rails shown in the main drawing. Or you could get out your mortising chisels and spend some time chopping at the workbench.

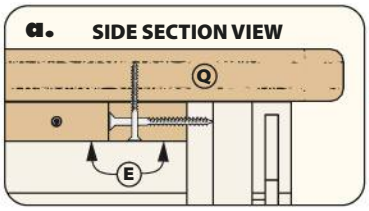
Next, you'll spend a little time at the table saw cutting tenons on the ends of the rails (detail 'a'). Before moving on to the back assembly, I glued up the front using spacers and clamping squares to ensure all the parts were properly spaced.

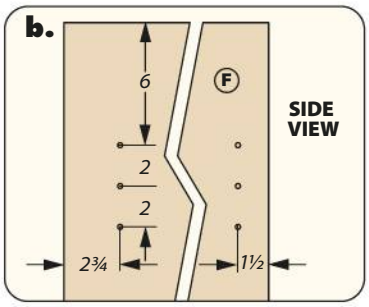
TONGUE & GROOVES. Making the centered grooves on the back rails and stile is a good place to start. The tongues that fit in those grooves (along with the plywood panels) are shown in detail 'b.' Once the plywood is cut to size, you can glue up the back assembly. Like the front, clamping squares and spacers are in order.

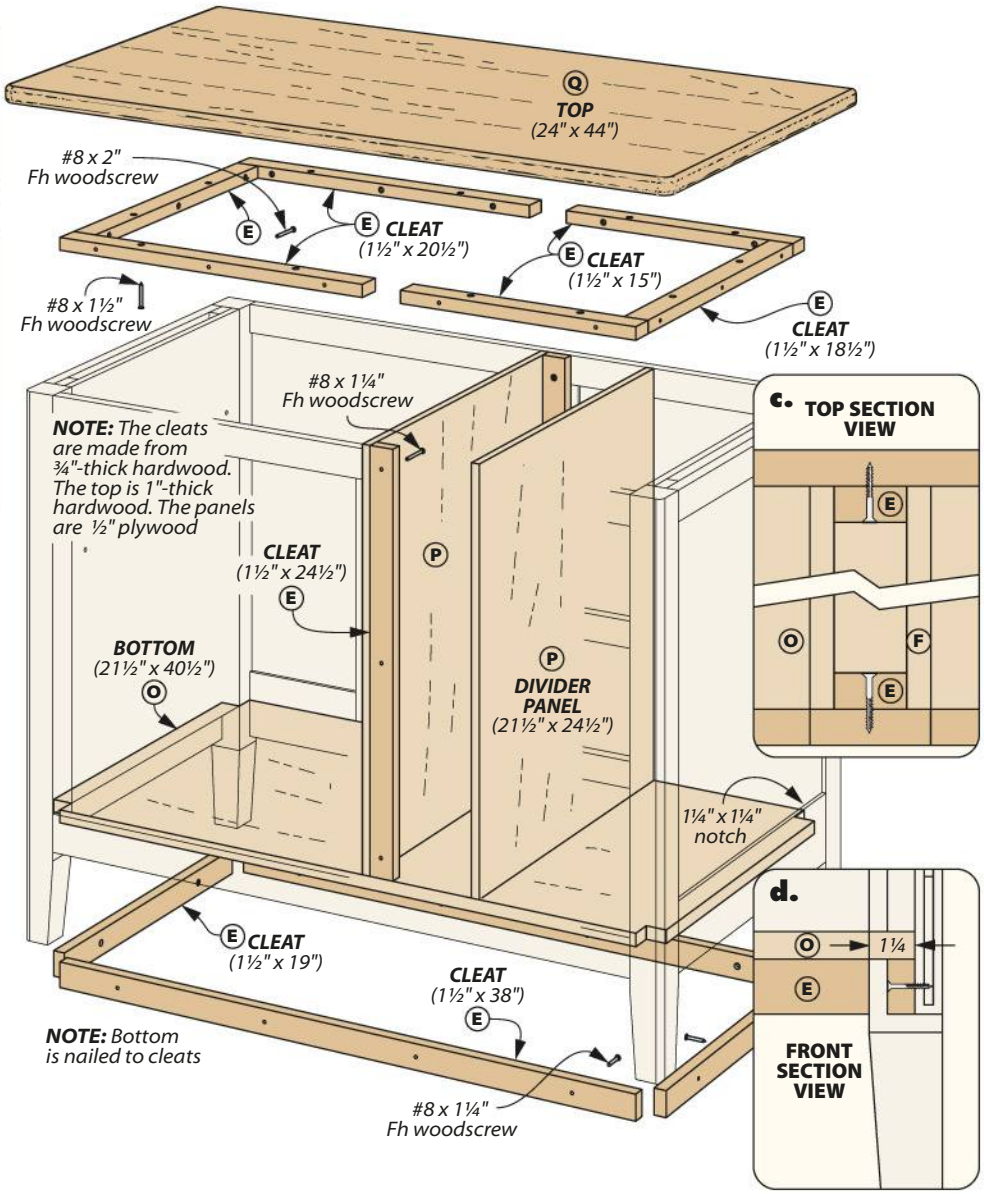
BRING IT ALL TOGETHER. How you choose to wrangle gluing together the sides, front, and back is up to you. Just make sure to use clamping squares in the corners. Also, use a tape to measure the top of the base corner to corner. A square base will have equal measurements. One last thing — to ensure there's no twist across the base, I glanced across the top with a pair of winding sticks.

BOTTOM, DIVIDER & TOP

The parts that close up the base are next. The bottom is a piece of plywood. The divider is a structure similar to the ends. As you see in detail 'c' on the next page, the divider is made of two divider panels that are nailed to the another pair of cleats. This assembly is screwed flush to the front and back stiles.







The top is glued up from 1"-thick hardwood boards. To get the ball rolling, start by using epoxy to bring together the boards for the top. While the glue is curing, focus on making and installing the bottom.

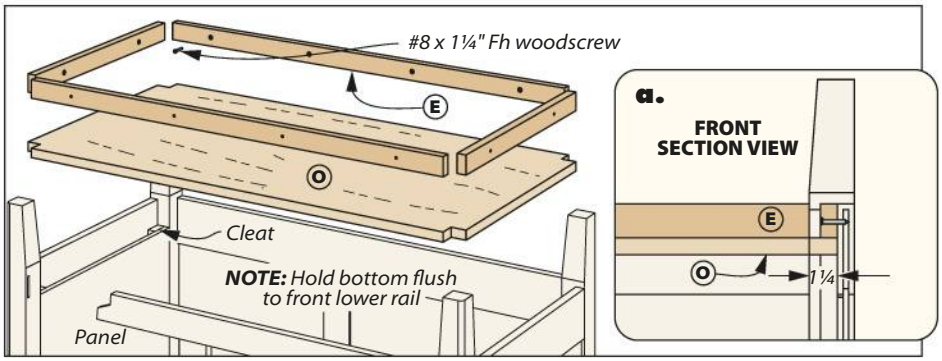
BOTTOMS UP. The main drawing and the box below show that all it takes to prepare the bottom is to cut it to size and notch the corners. Next, turn the base upside down and lower the bottom into the shell. Let it rest on the interior panels while you install the cleats.

INTERIOR WALL. The divider is too narrow to install as a unit. To start, nail one of the interior panels to the cleats. Then screw the cleats to the front and back stiles — make sure the panel is flush with the stiles (detail 'c'). Then nail the other interior panel in place.

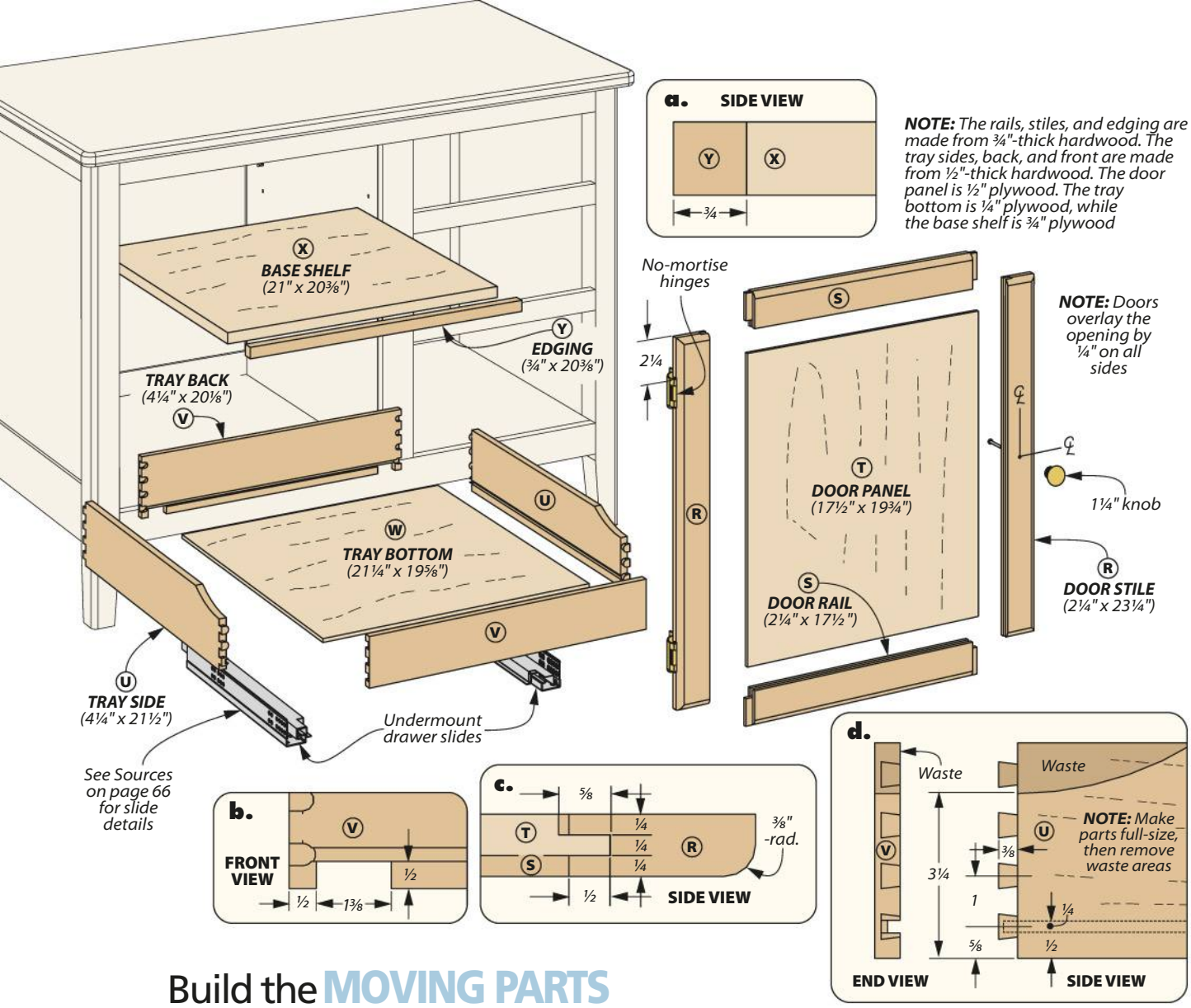
Detail 'b' shows the location of the shelf pin holes on the face of the left interior panel. I chose to drill them now. When making the cleats for the top, drill oversized shank holes on the end cleats to allow for seasonal movement of the top.

Detail 'a' above shows the roundover needed on the front and side edges of the top. Once that's done, screw the top on the base flush to the back and centered side to side.

INSTALLING THE BOTTOM



Upside Down. Installing the bottom is just a matter of lowering the bottom onto the edges of the interior panels, then screwing the cleats in place.



Build the MOVING PARTS

Now it's time to add the dynamic parts of the base. The drawing above shows what's going on on the left side of the base. There's a door that conceals the pull-out tray that's attached to the base with heavy-duty undermount drawer slides. There's also an adjustable shelf to make use of the space above the tray.

MAKE A BIG DOOR. The door is a no-nonsense frame and panel door. Start by cutting the stiles and rails to size. Then you'll make centered grooves in the four parts. Detail 'c' shows this.

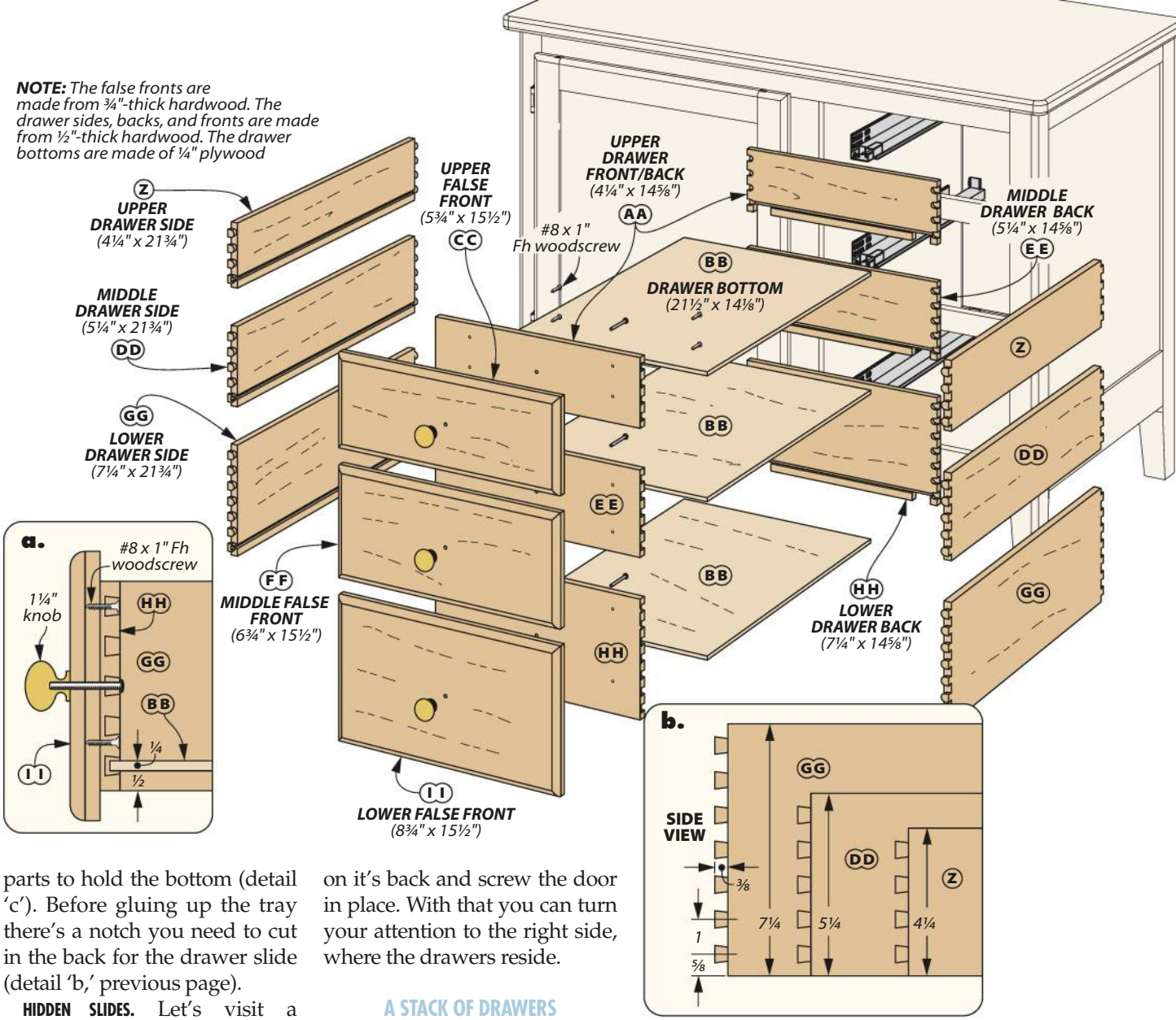
Right on the heels of that task you can tackle cutting the tongues on the ends of the rails. I always do a test cut on a scrap before committing the cut to the real rails. To add rigidity to the door I used a piece of ½" plywood for the panel (detail 'c'). I buried a dado blade in a sacrificial fence that I attached to my rip fence with double-sided tape. Then it's just a matter of cutting the rabbet around the perimeter of the panel.

While the table saw winds down, I took all the parts of the door to the workbench for a quick glueup. When the glue was cured I routed the outer edge of the door — like you see in detail 'c.'

MAKE THE TRAY. Making the tray introduces the use of half-blind dovetails for the joinery. This joinery is just the ticket for holding together a tray that's subject to the rigors of storing up to 75 lbs. (the maximum load of the slides) while sliding completely out of the base.

This calls for the use of a dovetail jig to make the tails and pins on the appropriate parts. If you're new to this type of joinery there's a primer online at *Woodsmith.com/272* that walks you through the process.

After all the parts are routed, detail 'd' shows how to modify the tray front and sides. This detail provides clearance for lifting appliances out of the tray. Next, there's a groove needed along the lower edge of the tray



parts to hold the bottom (detail 'c'). Before gluing up the tray there's a notch you need to cut in the back for the drawer slide (detail 'b,' previous page).

HIDDEN SLIDES. Let's visit a moment about the slides I've been talking about. They're made by *Blum* and are packaged with instructions. Also, their *YouTube* channel adds to the information provided with the slides. There you'll be shown additional details about drilling pilot holes in back, and front of the tray for slides.

The next thing to do on the left side of the base is to make the shelf that's above the tray, it's a simple piece of plywood with a hardwood edge glued to it (detail 'a,' previous page).

The last thing to do on the left side of the base is attaching the door. (No mortise hinges hold the door in place.) Lay the base on it's back and screw the door in place. With that you can turn your attention to the right side, where the drawers reside.

A STACK OF DRAWERS

No Hoosier cabinet would be complete without the signature stack of drawers you see in the drawing above. They increase in height from top to bottom and use the same drawer slides as the ones on the tray. As with the tray, cut all the parts to final size before hauling out the jig.

MORE DOVETAILS. If this is the first time you've used a dovetail jig you're going to be a pro by the time you've made these drawer boxes (detail 'b'). When the jig is tucked away, cut grooves along the lower inside edges for the drawer bottoms. The grooves are the same as the ones in the tray, so cut them at the table saw. Next, cut the notches in the bottom of the back for the slides. Remember to drill the pilot holes for the slide hardware. Then you're ready to glue up the drawer boxes.

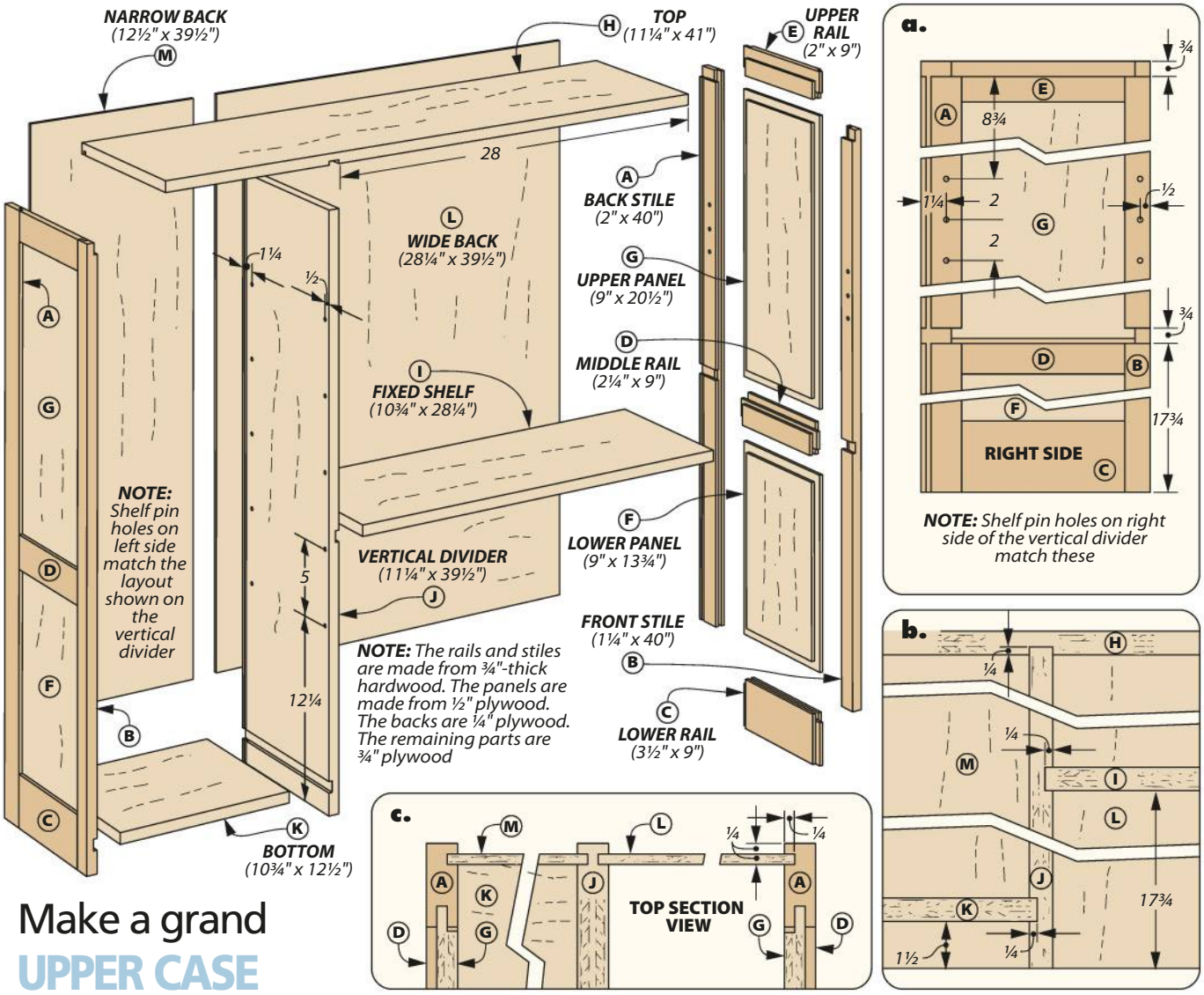
A STACK OF SLIDES. Install the drawer slides in the cabinet using spacers to support the slides and hold them parallel to the opening. The slides screw to the sides of the base. Now you can clip the drawer boxes to the slides and install them.

FALSE FRONTS. Detail 'a' above shows how the false fronts are positioned on the drawer boxes. Starting from the bottom up I used 1" shims for spacing between each drawer.

GO 2 Online Extras

For more on making half-blind dovetails, go to:

Woodsmith.com/272



Make a grand UPPER CASE

You could stop here and have a fine base — but let's not. After all, the upper case adds another layer of legitimate options to this kitchen ally. Glancing at the drawing above, you see on the left a tall opening that's home to a pair of adjustable shelves. The larger cavity on the right sports more storage above and an appliance garage below. In keeping with the traditional look of a Hoosier cabinet, the sides are a frame and panels assembly — let's start working there.

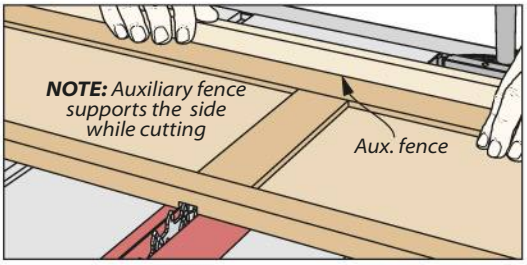
FRAME & PANEL. Head to the table saw and cut the stiles and rails to size. Notice in detail 'a' that the front stiles are narrower than their back counterparts. Later, when you glue the face frame to the case, the look will balance out.

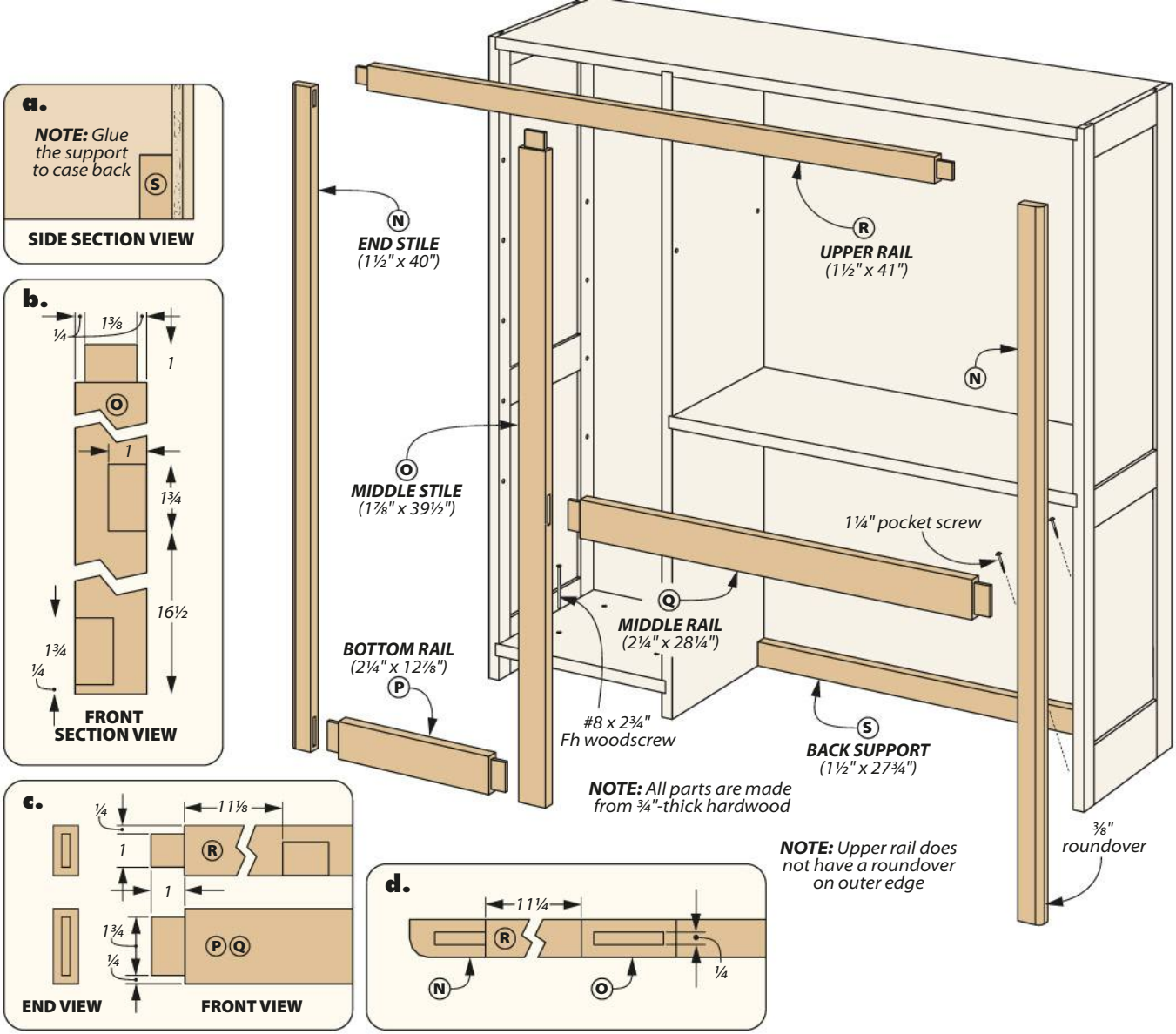
Next on the list are centered grooves on the stiles and rails. Don't leave the table saw just yet, now you need to cut the tongues on the rails and rabbet the edges of the plywood panels (detail 'c'). And just like that — you're ready to glue up the sides.

After the clamps are stowed, cut the groove along the rear edge for the plywood back (detail 'c'). Follow this up with cutting the two dadoes in the left side for the top and bottom. The right side has two dadoes as well, one for the top, the other for the fixed shelf. The box to the left shows that step being done. Detail 'a' shows the location of the dado in the right side.

CASE PARTS. Ripping the plywood parts (and trimming them to length) is at the top of the

DADO THE SIDES





to-do list now. The divider has a groove along both sides for the plywood back (detail 'c,' previous page). It also has a dado for the vertical divider (detail 'b,' previous page).

The vertical divider has grooves for the backs as well (you probably cut that when I was yakking about the dadoes in the top). There are two dadoes in the divider also: one for the bottom and one for the fixed shelf. The last bit of table saw work is sizing the plywood backs.

GLUE UP. Glue up the all the parts using clamping squares along the way. The one thing left to do is drill the shelf pin holes. The main drawing on the previous page shows the configuration for the left side on the face of the plywood divider. Detail 'a' on the previous page shows the hole layout on the right side that gets drilled in the right face of the divider.

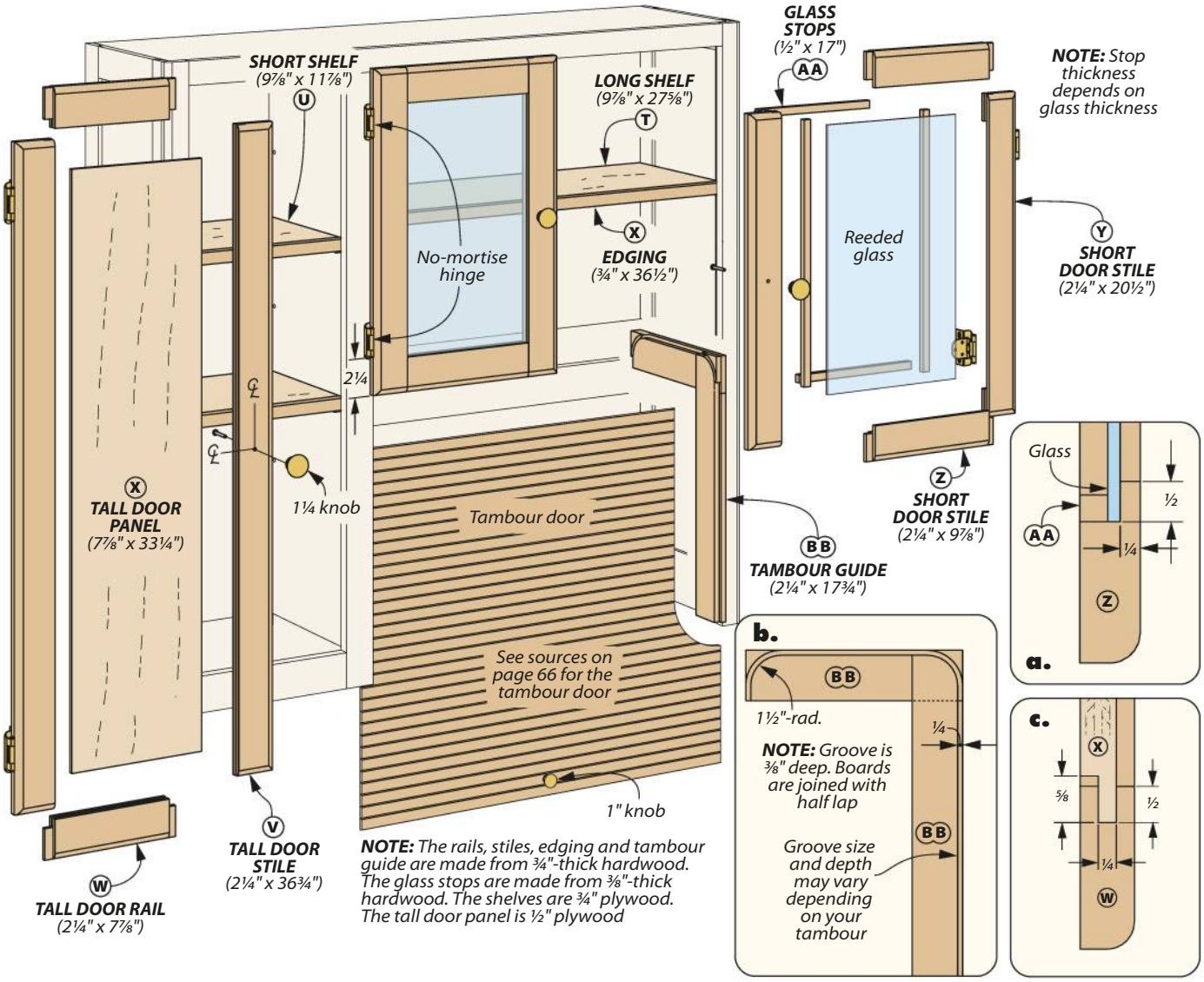
FACE FRAME

Like the base before, the face frame of the upper case articulates the rough openings you've made with the sides and plywood parts. It's the last in line of the assemblies brought to you by mortise and tenon joinery.

MORTISE & TENON. Once all the parts are sized, you'll find yourself back at the bench laying out the mortises on the stiles and upper rail. Each vertical stile has two mortises to contend with. The middle stile's are on opposite edges (detail 'b'), while the end stile mortises are on the same edge. The top rail has one for the middle rail (detail 'c'). Whether you rout or chisel the mortise is up to you. Once that's done, you can move on to making the tenons (detail 'c').

Gluing up the face frame is what you do before gluing it to the case. Then you rout the roundover on the outer edges of the stiles (detail 'd'). For the sake of rigidity, glue the back support to the plywood back (detail 'a').

To attach the upper case to the base, use woodscrews through the bottom on the left, and pocket screws on the inside surface of the right side.



Adding the DOORS & TAMBOUR

You can see the home lights on the horizon as far as this project goes. Just three doors, three shelves, and a guide for the tambour door to ride in are all that's left to do.

As a warm up, I cut the shelves to size and glued the edging on the front edges. Now we'll focus on the doors.

MORE DOORS. Here the doors are mostly an encore of what you made earlier. I say mostly because, as you see in the drawing above, the small doors contain glass. That's a bit off the previous path, but nothing you can't handle. So let's get to ripping and sizing the stiles and rails. Detail 'c' shows the centered groove that you'll cut in all the parts. When the grooves are done, adjust the landscape of your table saw to cut the tongues on the ends of the rails. As always, a test cut and fit of the tongues is in order.

The plywood panel that resides in the tall door needs a little dressing. Detail 'c' shows the rabbet you need to cut around the inside edge of the panel. With that task done — you can glue up all three doors.

MAKE ROOM FOR GLASS. Detail 'a' above shows how we accommodated the glass in the two smaller doors. Just use a rabbeting bit in your router to remove the back edge, then square up the corners.

As for making the stops, the size of glass you have will ultimately determine that. I'm always a little nervous when installing the stops. I pre-drill a slightly oversized hole and carefully install brad nails.

TAMBOUR DOOR

The tambour door that covers the opening of the appliance garage was purchased online (refer to Sources on page 66).

The simple guide you see in detail 'b' was our answer to housing the door in the front of the appliance garage. It's joined with half-laps and screwed to the inside of the case. You can slide the tambour in place from the inside, then add the knob. All said and done this Hoosier cabinet will be the envy in any setting. But you're going to need strong friends to move it. W

Materials, Supplies & Cutting Diagram

BASE

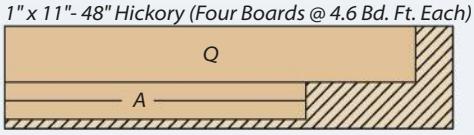
A	Legs (4)	2 x 2 - 32¼
B	Lower Side Rails (2)	¾ x 4 - 21
C	Upper Side Rails (2)	¾ x 1¾ - 21
D	Side Panels (2)	½ ply. - 19½ x 21½
E	Cleats	¾ x 1½ - 280 rgh.
F	Interior Panels (2)	½ ply. - 19 x 24½
G	Front Lower Rail (1)	¾ x 2¼ - 40
H	Front/Back Upper Rail (2)	¾ x 1¾ - 40
I	Drawer Rails (2)	¾ x 1½ - 17
J	Front Stile (1)	¾ x 2½ - 24¾
K	Back Lower Rail (1)	¾ x 4 - 40
L	Back Stile (1)	¾ x 2½ - 21½
M	Wide Back Panel (1)	¼ ply. - 21 x 21½
N	Nrw. Back Panel (1)	¼ ply. - 15½ x 21½
O	Bottom (1)	¾ ply. - 21½ x 40½
P	Divider Panels (2)	½ ply. - 21½ x 24½
Q	Top (1)	1 x 24 - 44
R	Door Stiles (2))	¾ x 2¼ - 23¼
S	Door Rails (2)	¾ x 2¼ - 17½
T	Door Panel (1)	½ ply. - 17½ x 19¾
U	Tray Sides (2)	½ x 4¼ - 21½
V	Tray Front/Back (2)	½ x 4¼ - 20⅛
W	Tray Bottom (1)	¼ ply. - 21¼ x 19⅝
X	Base Shelf (1)	¾ ply. - 21 x 20⅜
Y	Edging	¾ x ¾ - 74 rgh.
Z	Upper Drwr. Sides (2)	½ x 4¼ - 21¾
AA	Uppr Drwr. Front/Back (2)	½ x 4¼ - 14⅝
BB	Drawer Bottoms (3)	¼ ply. - 21½ x 14⅛
CC	Upper False Front (1)	¾ x 5¾ - 15½
DD	Mid. Drwr. Sides (2)	½ x 5¼ - 21¾
EE	Mid. Drwr. Front/Back (2)	½ x 5¼ - 14⅝
FF	Mid. False Front (1)	¾ x 6¾ - 15½
GG	Lwr. Drwr. Sides (2)	½ x 7¼ - 21¾
HH	Lwr. Drwr. Front/Back (2)	½ x 7¼ x 14⅝
II	Lower False Front (1)	¾ x 8¾ - 15½

UPPER CASE

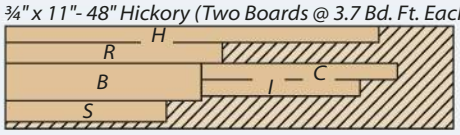
A	Back Stiles (2)	¾ x 2 - 40
B	Front Stiles (2)	¾ x 1¼ - 40
C	Lower Rails (2)	¾ x 3½ - 9
D	Mid. Rails (2)	¾ x 2¼ - 9
E	Upper Rails (2)	¾ x 2 - 9
F	Lower Panels (2)	½ ply. - 9 x 13¾
G	Upper Panels (2)	½ ply. - 9 x 20½
H	Top (1)	¾ ply. - 11¼ x 41
I	Fixed Shelf (1)	¾ ply. - 10¾ x 28¼
J	Vertical Divider (1)	¾ ply. - 11¼ x 39½
K	Bottom (1)	¾ ply. - 10¾ x 12½
L	Wide Back (1)	¼ ply. - 28¼ x 39½
M	Narrow Back (1)	¼ ply. - 12½ x 39½
N	End Stiles (2)	¾ x 1½ - 40
O	Middle Stile (1)	¾ x 1⅞ - 39½
P	Bottom Rail (1)	¾ x 2¼ - 12⅞
Q	Middle Rail (1)	¾ x 2¼ - 28¼
R	Upper Rail (1)	¾ x 1½ - 41
S	Back Support (1)	¾ x 1½ - 27¾
T	Long Shelf (1)	¾ ply. - 9⅞ x 27⅝
U	Short Shelves (2)	¾ ply. - 9⅞ x 11⅞
V	Tall Door Stiles (2)	¾ x 2¼ - 36¾
W	Tall Door Rails (2)	¾ x 2¼ - 7⅞
X	Tall Door Panel (1)	½ ply. - 7⅞ x 33¼
Y	Short Door Stiles (4)	¾ x 2¼ - 20½
Z	Short Door Rails (4)	¾ x 2¼ - 9⅞
AA	Glass Stops (2)	⅜ x ½ - 72 rgh.
BB	Tambour Guide (2)	⅜ x 2½ - 58 rgh.

- (2) 10" x 17" Reeded Glass
- (6) 1¼" Knobs
- (1) 1" Knob
- (4) #8 x 2¾" Fh Woodscrews
- (30) #8 x 1¼" Fh Woodscrews
- (28) #8 x 1½" Fh Woodscrews
- (10) #8 x 2" Fh Woodscrews
- (12) #8 x 1" Fh Woodscrews
- (16) Shelf Pins
- (2) 1¼" Pocket Screws
- (4 pr.) No-Mortise Hinges
- (1) 18" x 27" Tambour Door
- (4pr.) 500mm Drawer Slides

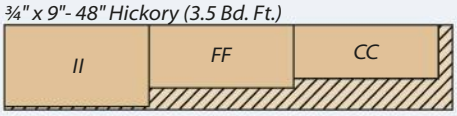
1" x 11"- 48" Hickory (Four Boards @ 4.6 Bd. Ft. Each)



¾" x 11"- 48" Hickory (Two Boards @ 3.7 Bd. Ft. Each)

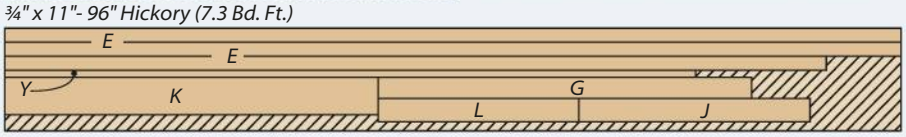


¾" x 9"- 48" Hickory (3.5 Bd. Ft.)



½" x 8"- 42" Maple (Two Boards @ 2.3 Bd. Ft. Each)

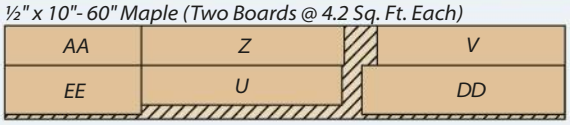
¾" x 11"- 96" Hickory (7.3 Bd. Ft.)



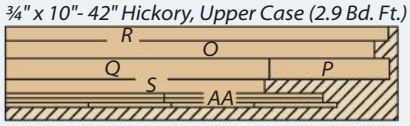
ALSO NEEDED: *For the Base you'll need the following Hickory plywood: One 48" x 48" Sheet of ¾", One 48" x 96" Sheet of ½", One 48" x 24" Sheet of ¼". For the drawers you'll need One 48" x 48" Sheet of ¼" Maple Plywood.*

The Upper Case requires the following Hickory Plywood: One 48"x 48" Sheet of ¾", One 48" x 48" Sheet of ½", and One 48" x 48" Sheet of ¼".

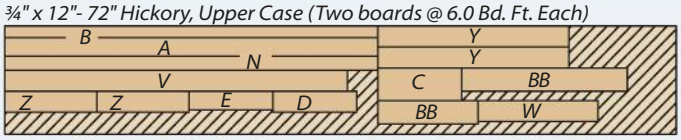
½" x 10"- 60" Maple (Two Boards @ 4.2 Sq. Ft. Each)



¾" x 10"- 42" Hickory, Upper Case (2.9 Bd. Ft.)



¾" x 12"- 72" Hickory, Upper Case (Two boards @ 6.0 Bd. Ft. Each)



Memory Box

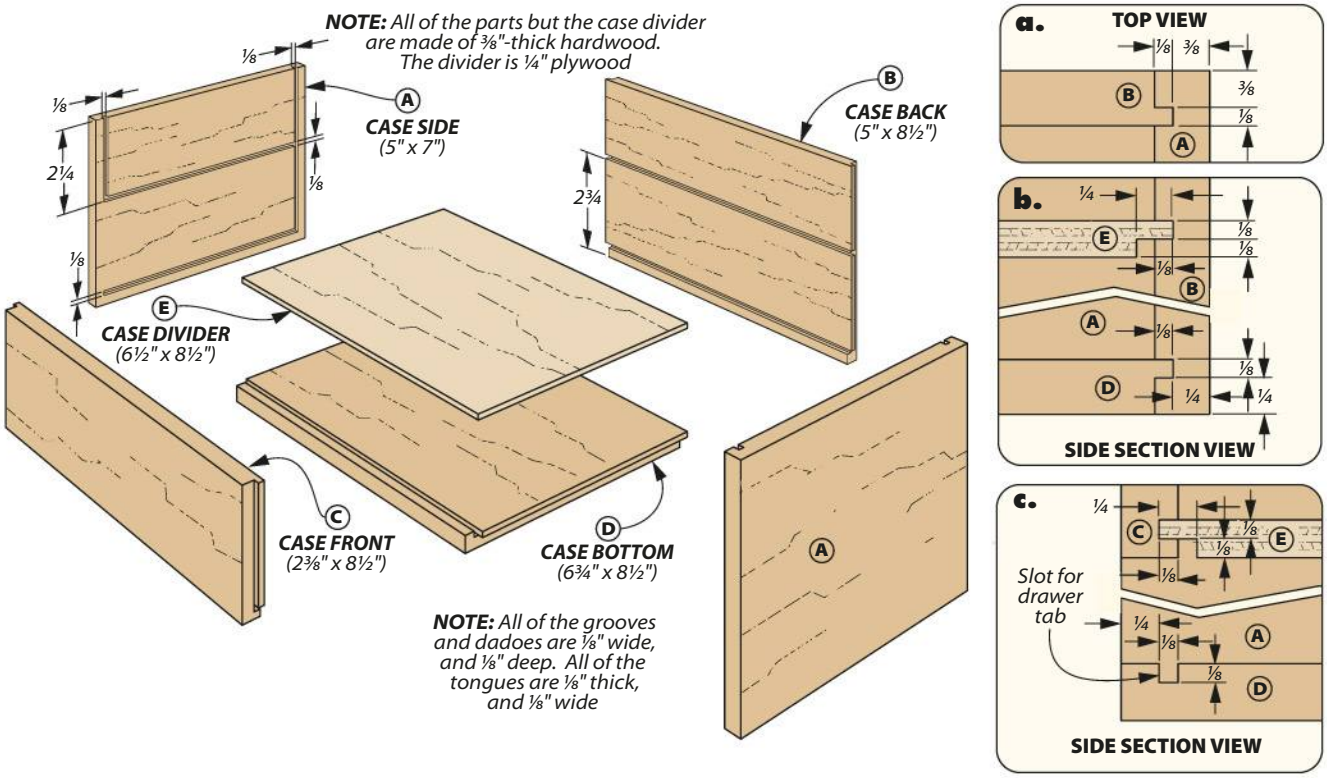
Making this small box is a welcome break in a busy shop. It provides a second life for orphaned scraps — as well as a tender gift.

▼ The ability to sift, sort, and store mementos is enhanced by the drawer that resides under the main chamber of the box.

There's a quote from L. M. Montgomery (the author of *Anne of Green Gables*) that captures the scope and worth of a memory box: "Nothing is really lost to us as long as we remember it." The memories we want to hold on to often run the gamut from grief to gratitude. The bits can be the glowing memory of a concert held in a torn ticket stub — or an artistic masterpiece done with a shocking amount of wit by a five-year-old grandchild.

TINY BUT MIGHTY. Regardless of what is ultimately stored in this keepsake container, it's a pleasant project that lets you hone your skills at the router table, along with crafting shop-made cove molding for the box top. In an effort to keep the look of the box light but strong we milled the walnut parts to ⅜"-thick pieces from ½" stock. The work begins on the next page.

Written by: Erich Lage; Project Design: John Doyle



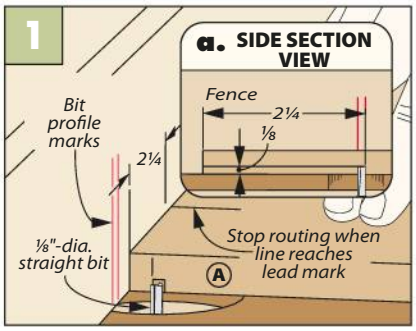
SIZING PARTS. With the blanks planed to thickness, you can cut the parts of the box you see above to size. Look a little closer and you'll notice that the front, back, and bottom have some straightforward grooves and tongues to deal with. The stopped dadoes and grooves in the sides require some upfront layout work before heading to the router table.

STOPPED GROOVES. The key is to first mark the location of the bit's contour on the fence of the router table (Figure 1). Then lay out the stopping points and intersections of the grooves and dadoes on the edges, as well as the outside face of the sides.

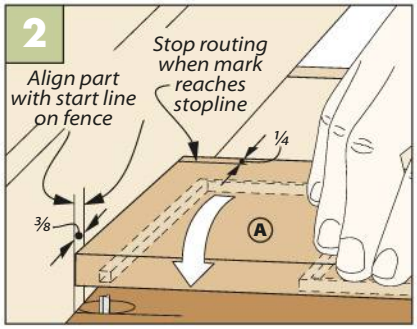
Since the sides are mirrored, the entry point for the bit will vary between the two parts. Figure 1 shows the easy part. Figure 2 shows one example of making a stopped groove.

TONGUES. Next, cut the tongues in the front, back, and case bottom (Figure 3). There's a rabbet to cut around the underside perimeter of the divider (detail 'b'). Before gluing up the case, cut the groove along the front edge of the case bottom for the tab on the underside of the drawer (detail 'c').

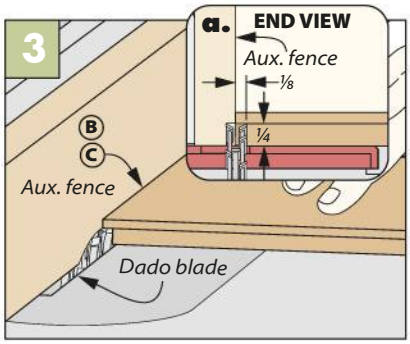
STOPPED DADOES



A Short Dado. To make the short stopped dado you'll draw a stop mark on the outer face of the sides

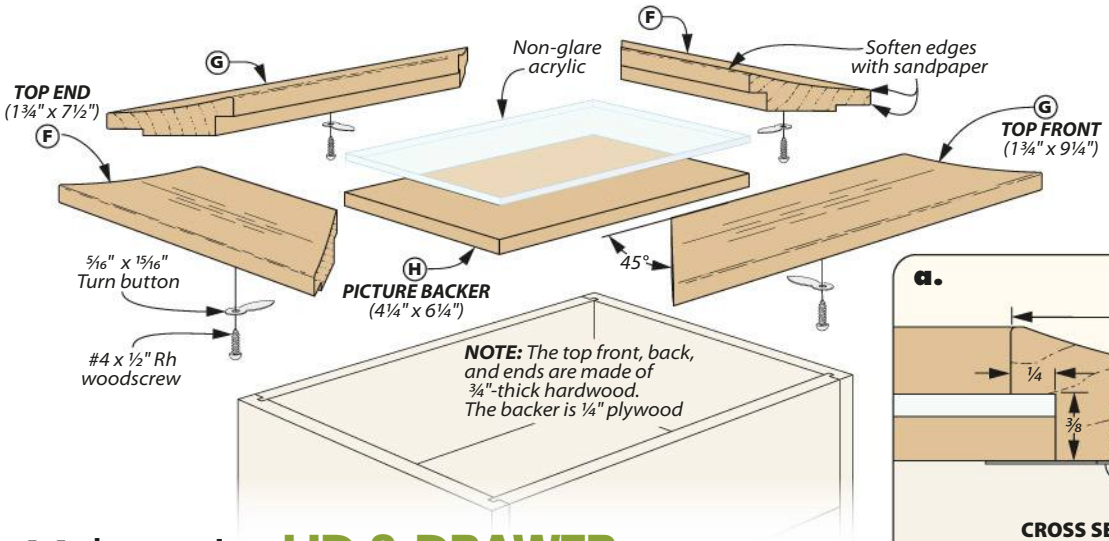


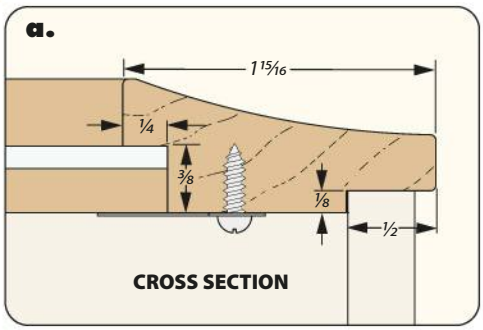
Hidden Work. You have to lower the side onto the bit to make the stopped dadoes and grooves.



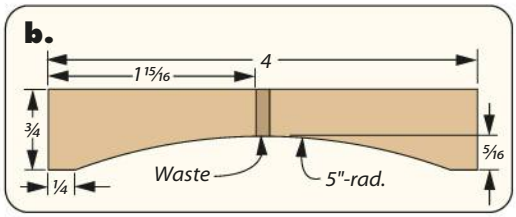
Add Tongues. The table saw makes quick work of the tongues you need on the front and back pieces.

Illustrations: Harlan Clark





Make a nice LID & DRAWER



Making your own cove molding for the lid of the box aligns perfectly with the notion of the box being a unique keepsake. It's a subtle touch that's worth the effort. More on how to make your own cove shortly — first let's visit a little bit more about the lid and the drawer.

ANATOMY. The lid you see above is a frame of four mitered pieces designed to hold a photo (or art) in the center. There's a modest rabbet on the underside that holds the lid in the box. The drawer you see on the next page is delicate and light, but comes with seriously strong joinery. At the back it's tongue and dadoes that hold the box together — up front it's locking rabbets. So you'll spend a little more time at the router table making these parts. Let's make the lid now.

THE LID. After cutting a blank to final size (detail 'b'), cut the rabbet for the glass opening first, like you see in Figure 1 below. If you've never made your own cove molding, the process is not overly complicated, but we don't have the space here to dive into the details. Not to worry though, there's an online resource at *Woodsmith.com/272*.

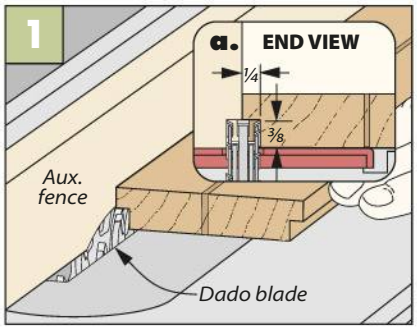
GLUE UP THE LID. To bring the frame together, miter the pieces to length and glue them up with a band clamp. Once the glue is dry, and the band clamp is rolled up, sand all the surfaces smooth. Then rout the rabbet on the underside of the lid (Figure 3). We used a thin piece of

GO 2 Online Extras

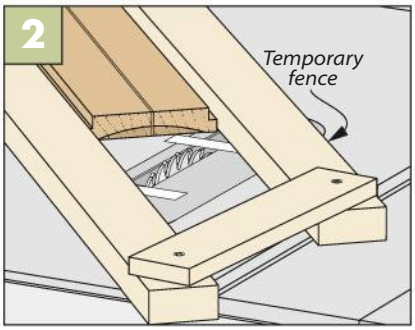
For more on shop-made cove molding, go to:

Woodsmith.com/272

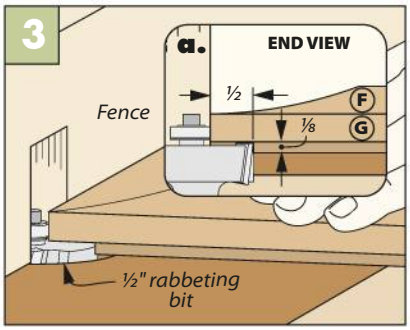
CREATING A COVED LID



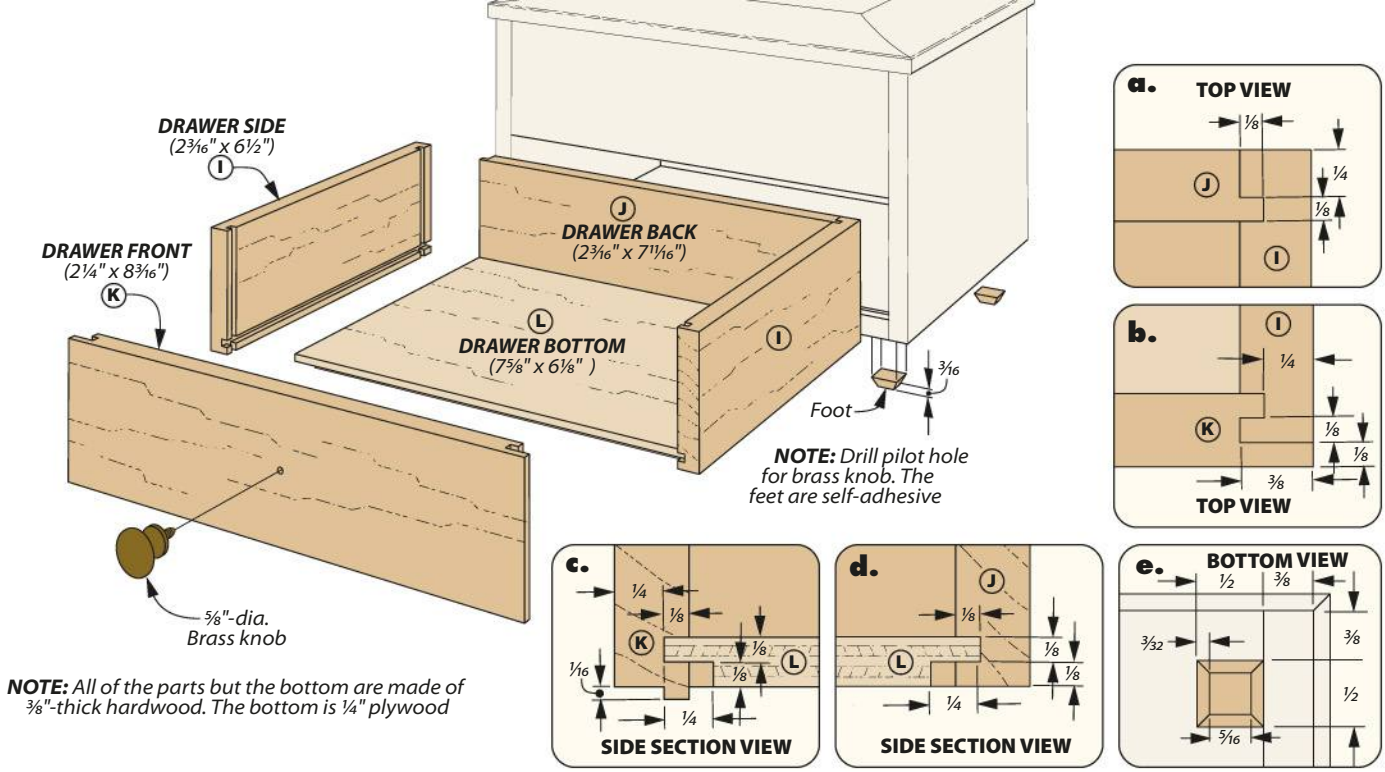
Inner Rabbet. Cut the rabbet on the edges of the cove blank before shaping the cove.



Shaping the Cove. To arrive at the cove you want, you'll make a series of shallow cuts in the blank.



Outer Rabbet. A rabbeting bit in your router table makes the ledge that holds the lid in the box.



non-glare acrylic to protect the photo from above. From below, it's a piece of plywood that's used for the picture backer. Install the turn buttons after the top coat has been applied.

THE DRAWER

I talked earlier about the anatomy and joinery of our little drawer — but there's one thing I left out. If you take a peek at detail 'c' above, you'll notice on the underside of the front edge there's a tab. That tab mates with the groove you made earlier in the case and will hold the drawer in place — preventing it from falling out of the box. Okay, back to work: cut all the parts to size.

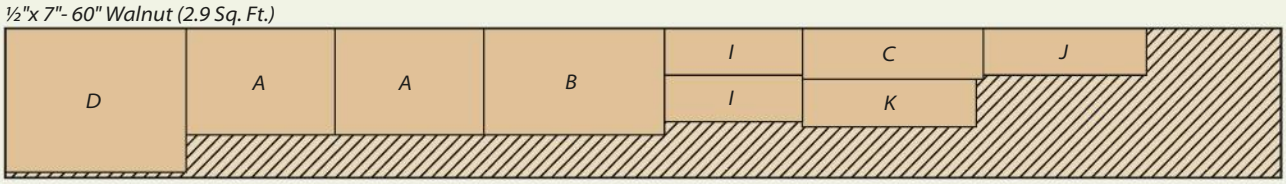
FRONT FIRST. Making a locking rabbet joint starts off by standing the drawer front on end and holding it tightly against the fence to make a slot that matches the width of the side. Now you need to lay the workpiece flat to cut back the inner lip, forming the tongue. The tongue will fit in the dado you'll make in the sides. All of this is shown in detail 'b' above. Next, trim away the waste on the bottom edge of the front to make the tab. The tongue and dado at the back of the drawer is a snap compared to the front.

Then rout the groove along the bottom edge to hold the drawer bottom. The drawer bottom needs a rabbet cut on the underside of it (detail 'd'). With that done, you can glue up the drawer. Apply two coats of lacquer — no stain needed for this little gem. Then add the feet to the bottom of the case, and the knob to the drawer. W

Materials, Supplies & Cutting Diagram

A	Case Sides (2)	3/8 x 5 - 7	G	Top Front/Back (2)	3/4 x 1 3/4 - 9 1/4	•	(1) 5/8" Brass Knob
B	Case Back (1)	3/8 x 5 - 8 1/2	H	Picture Backer (1)	1/4 ply. - 4 1/4 x 6 1/4	•	(4) 1/2" Square Feet
C	Case Front (1)	3/8 x 2 3/8 - 8 1/2	I	Drawer Sides (2)	3/8 x 2 3/16 - 6 1/2	•	(1) .050" Non-Glare Acrylic Sheet
D	Case Bottom (1)	3/8 x 6 3/4 - 8 1/2	J	Drawer Back (1)	3/8 x 2 3/16 - 7 11/16	•	(4) 5/16" x 15/16" Turn Buttons
E	Case Divider (1)	1/4 ply. - 6 1/2 x 8 1/2	K	Drawer Front (1)	3/8 x 2 1/4 - 8 3/16		
F	Top Ends (2)	3/4 x 1 3/4 - 7 1/2	L	Drawer Bottom (1)	1/4 ply. - 6 1/8 x 7 5/8		

1/2"x 7"- 60" Walnut (2.9 Sq. Ft.)



3/4"x 2"- 36" Walnut (0.5 Bd. Ft.)

ALSO NEEDED: *One 24"x 24" Sheet of 1/4" Walnut Plywood*

Twisted Till

This small project says a lot. These twisted dovetail joints will make for a unique challenge and an eye-catching addition to your shop.

Hand-crafted joints are always a thing of beauty. As a woodworker, I have a deep appreciation for the technical skill and understanding of the tools and materials one needs to make a clean joint by hand. Dovetails are often hailed as the pinnacle of hand-cut joinery, but what you see here brings the technique to a new level.

When Chris Fitch first drew up these plans, hand-cutting wasn't the primary intention. He wanted to create a stripped-down project that would allow us to focus on the specifics of the joinery used. At first we thought it might be most efficient and consistent to use the table saw. However, the compound angles need to be exactly the same for these joints to work, and there was just too much inconsistency between the table saw's tilt and a miter gauge's angles. In the end we found the old-fashioned way was best (and a good use for the saws that will go inside).

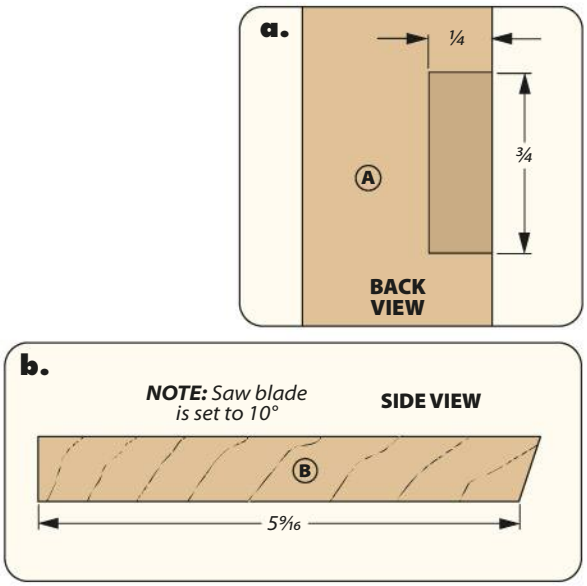
The twisted dovetail can be a bit difficult to wrap your head around at first, but in truth, it's cut quite similarly to how one would cut a traditional dovetail by hand. As you'll see, the key is really in a proper layout and learning the muscle memory to cut a compound angle. The joint is quite strong, and the unique look will certainly catch the eye of any astute observer, leaving many wondering how it was done. If you have some saws in need of a little workout — and a good home — look no further than this dutiful till.

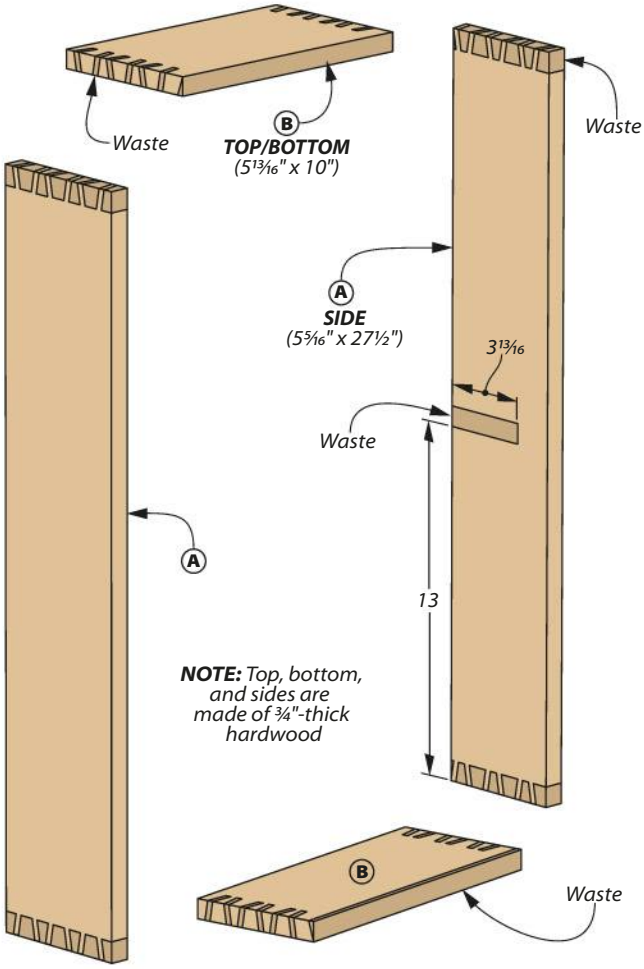
▲ Hand-cut pins set at compound angles slide into these "twisted" tails, creating a strong and striking joint on the corners of the case.

▲ Kerfs cut in the central shelf provide clearance for saw blades, holding them upright and keeping the teeth safe.

Written by: Rob Petrie; Project Design: Chris Fitch

Illustrations: Dirk Ver Steeg





Beginning the TILL

The saw till begins with four cases pieces: a top, a bottom, and two sides. Before getting to the twisted dovetails that join them, there are a few things to address.

First, when cutting the top and bottom pieces to width, bevel cut the front edges, as you see in detail 'b' above. Keep in mind that detail 'b' shows the top piece — the bevel on the bottom piece goes 10° in the opposite direction. Additionally, you'll want to plane the shelf to thickness now as well (shown on page 57). This piece is the same thickness as the top, bottom, and sides, and it'll help you size the dadoes that come next.

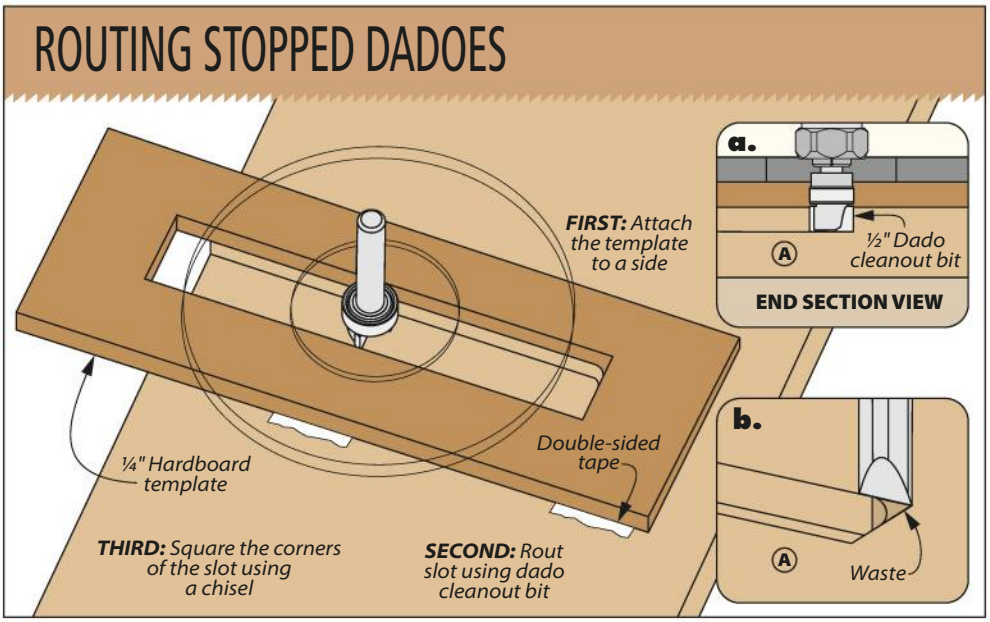
STOPPED DADOES. A stopped dado in each of the sides will fit the shelf that will be added later. These dadoes will match the width and thickness of the shelf (shown in detail 'a' above).

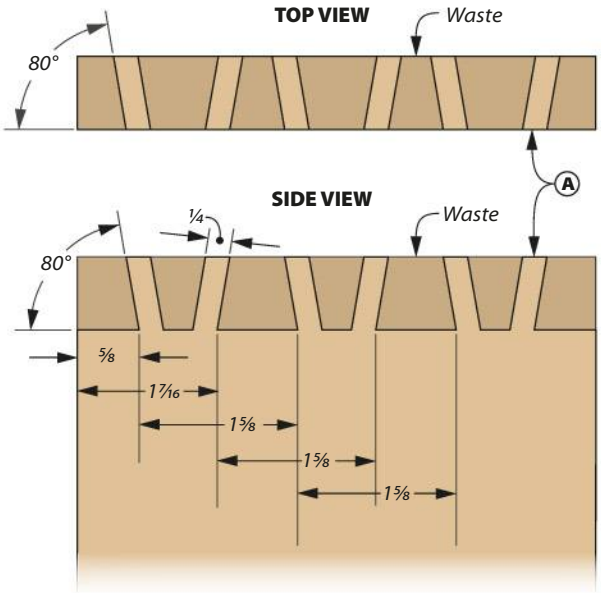
After laying out the dadoes, I made a template, which you can see in the box to the left. After securing the template with double-sided tape, I put a dado cleanout bit in my plunge router and removed most of the waste from the slot. To clean up the corners, I simply used a chisel.

TWISTED PINS

Now for the interesting part of this saw till: the twisted dovetails. Because of their shape, it's most efficient to cut these by hand. Luckily, this is similar to cutting traditional dovetails by hand (more on that on page 18), with a few exceptions of course.

The key to this style of joint is the marking guide shown on the bottom of the next page.





It's two pieces of MDF; one registers against the edge of the workpiece and the other is cut at 80° to help lay out the angles of the pins and tails. The pins and tails are at compound 80° angles, exactly equal in both directions. While it doesn't matter if these angles aren't precisely 80°, it is vital that they're equal on both axes, which is where the marking guide comes in.

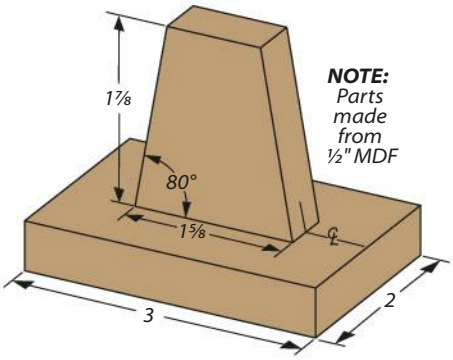
LAYING OUT THE PINS. Although it's really a matter of preference, I always begin my dovetails at the pins. The illustrations above shows the ideal layout for the pins on the side pieces. The first step is to scribe the baseline. I used the top piece to help me mark this out, clamping it flush to the end of the side and scribing along it with a marking knife. A marking knife is important, as it'll give you a groove to register your chisel in.

With the baseline in place, I used the marking guide to lay out the pins. I began as in Figure 1, scribing the angles on the ends, first. From there I connected those lines to the baseline with the guide in place (Figure 2).

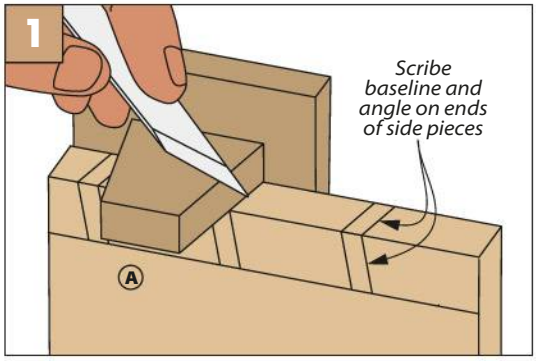
HAND-CUT PINS. Cutting the pins is easier than it seems, but it will require either a steady saw hand or some dedication with a chisel. Removing the waste begins by forming the sides with a back saw (Figure 3). The goal here is like blackjack: get as close to the layout line as you can without going over. If you're well practiced with a saw, this will really cut down on the chisel work. If not, take your time and correct as needed while sawing, getting as close to the line as you feel confident going. It's a good idea to make a few test cuts on scrap pieces first. If you're anything like me, it'll take a little bit to make the compound angle feel natural.

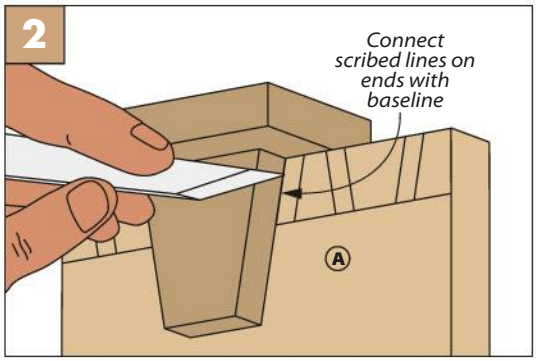
After sawing to the baseline on each pin, chop out the waste with a chisel. Start from one side, going halfway down, then flip the workpiece to finish the pins from the other side (Figure 4).

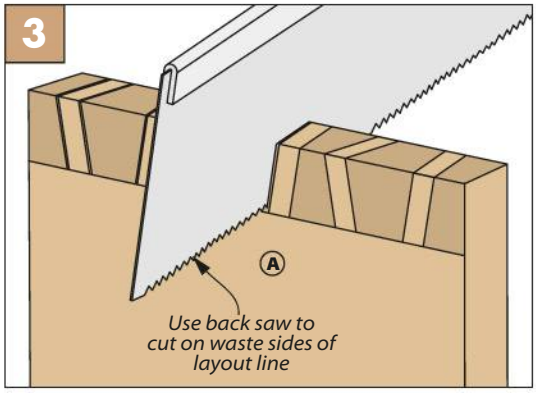
80° JOINERY MARKING GUIDE

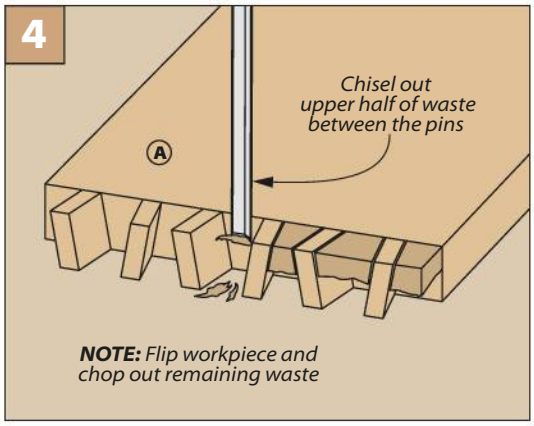


LAYING OUT THE PINS









Matching the **TAILS**

After you've pared your pins down to the proper shape and size, it'll be time to work on their mating tails. You'll find your work on the pins paying off here, as the layout and cutting are done in the same way. Of course, there are still a few curve balls to keep your eye on.

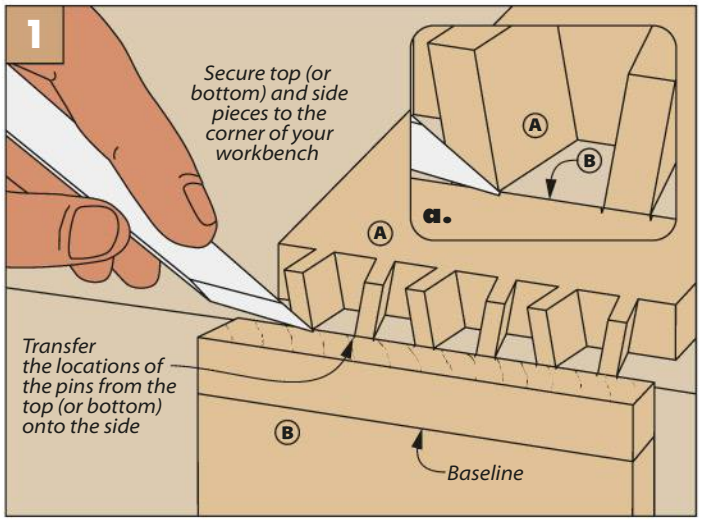
TAIL LAYOUT. After scribing a baseline on the layout for the tails, begin by transferring the locations of the pins from the side pieces to the top and bottom, as in Figure 1. With those in place, use the marking guide to scribe the layout of the tails on the ends (Figure 2). I advise keeping the mating piece nearby as you scribe these lines to make sure you have the guide at the proper orientation. Finally, like you see in Figure 3, use the guide to connect the lines on the end to the baseline.

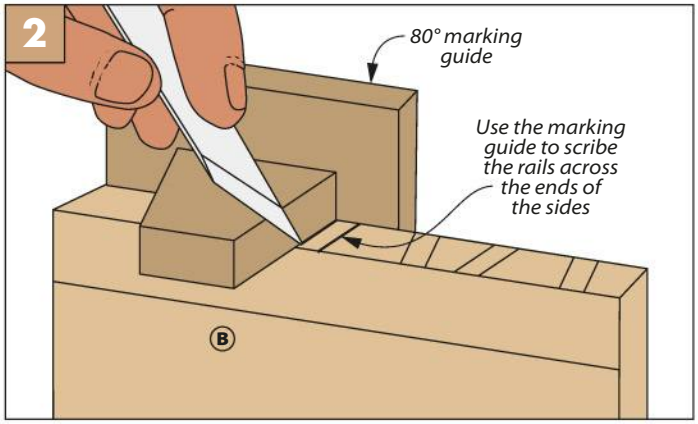
CUTTING THE TAILS. You can walk into this next procedure with confidence — you've already cut the pins and this is no different. As before, get the feel for the compound angle with a few test cuts, then try to cut as close to that layout line as possible. A slim amount of waste will make for easier (ergo cleaner) cuts with a chisel. Once you're feeling confident, cut along the sides of the waste.

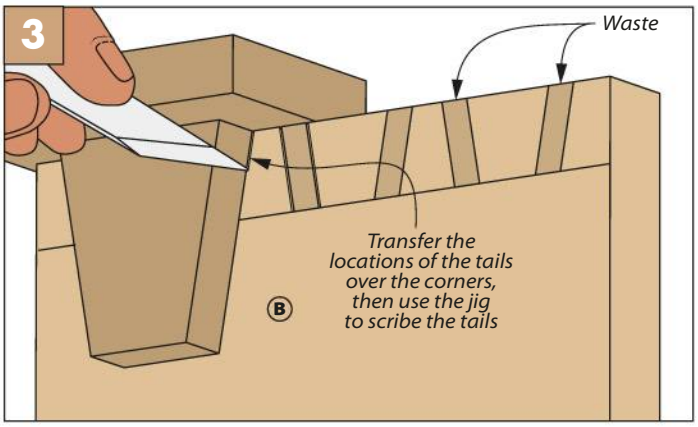
Now, back to the chisel. Lay your piece face down once more and begin chopping out the upper portion. After getting through the upper waste, flip the piece over and clean out the rest.

TEST YOUR JOINTS. The final step before putting the case together is to ensure you've got a well-fit joint on each corner. You can see how these joints come together at the top of the next page, but there's a chance that they won't fit quite that nicely on the first try.

TWISTING TAILS







In that case, use a pencil to shade over high spots and pare them down. Take your time. Once the joints slide together about halfway, you should be ready to apply the glue and fully seat them with a mallet (upper right photo, next page).

SHELF & BACK

The twisting dovetails complete the case and certainly give the

project its form, but there's still a matter of function. It is a saw till after all. So, while the glue dries on the case, there are two other pieces to work on.

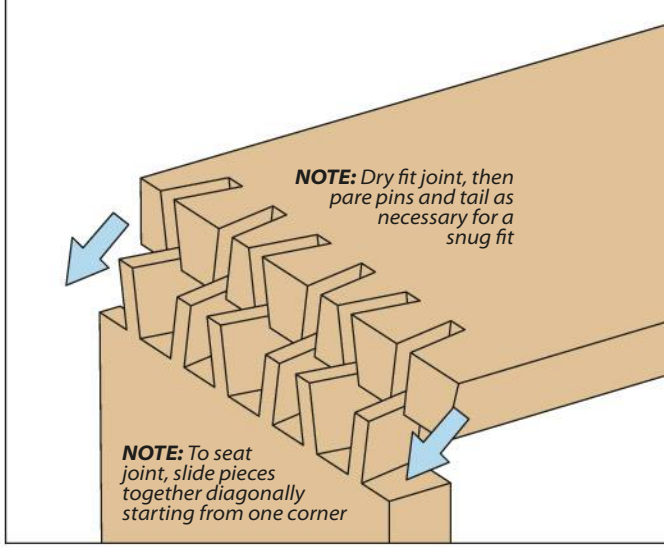
SAW SHELF. The first piece on the docket is one you've already planed: the shelf. After cutting the shelf to fit between the sides, I took it over to the router table to create the chamfer along the front edges. After that, I headed to the table saw.

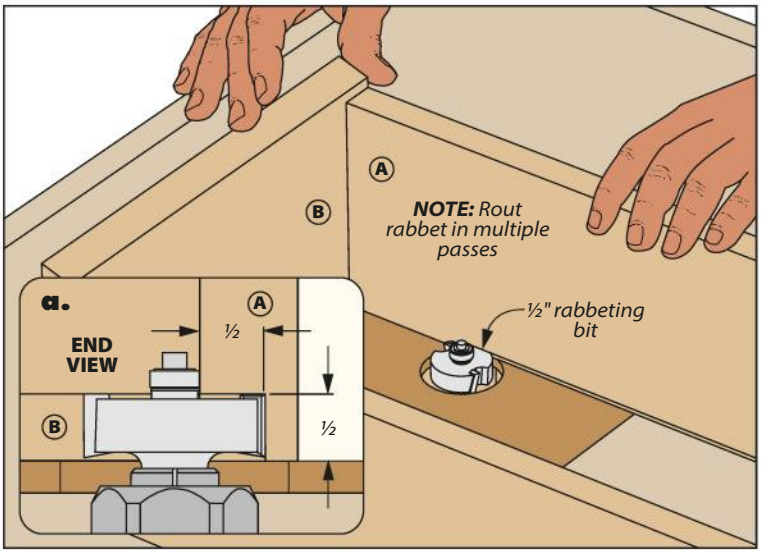
Here I set up an auxiliary fence on my miter gauge to back up the shelf while I made my cuts. I began with a dado blade buried in an auxiliary fence, using it to cut the notches on the front corners that wrap around the unslotted fronts of the sides. Next, I moved the fence away and put in a narrow, flat-topped blade. After raising the blade up, I used it to create the saw kerfs.

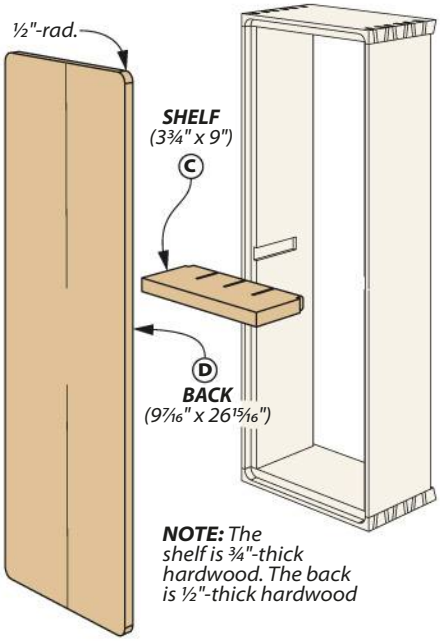
BACK RABBET. After the clamps come off the case, you'll next need to make room for the back panel. A rabbet along the back edge of each case piece does the trick — you can see how I did this at the router table in the illustration below. This is an easy task to accomplish, just remember to turn the case clockwise to avoid backrouting.

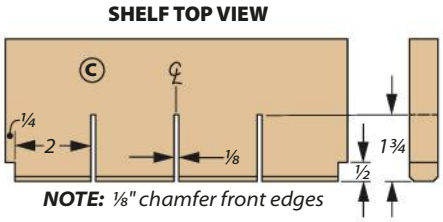
BACK PANEL. Finally, the back panel can be cut to size. The only thing to do on this piece is make those radiused corners (middle right illustration). I marked out the radii using a compass, then cut most of the waste at the band saw. I got the final shape at the edge sander. Once the back is complete, the shelf can be glued in and the back pin nailed in place.

To finish the till, I only used a bit of tung oil. This project won't need that much protection, and the oil alone brings out the grain wonderfully. Now you just need to choose this till's new home. W





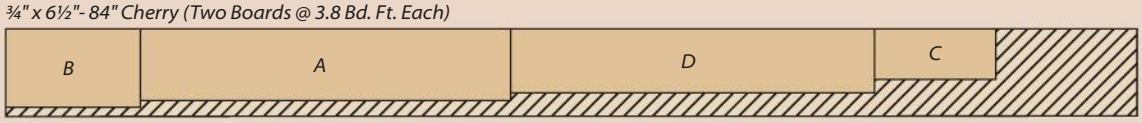




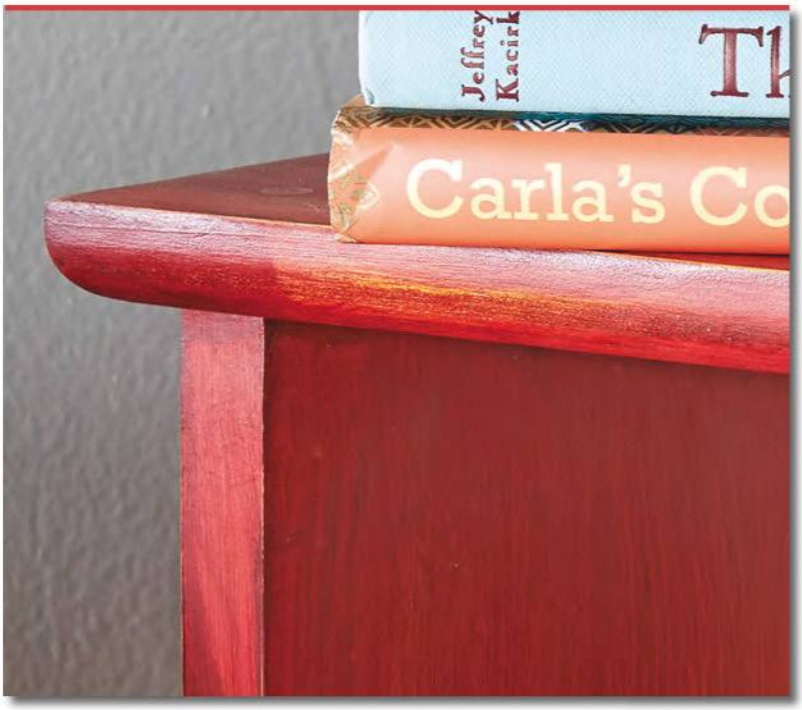
Materials, Supplies & Cutting Diagram

A	Top/Bottom (2)	$\frac{3}{4}$ x $5\frac{13}{16}$ - 10	**C**	Shelf (1)	$\frac{3}{4}$ x $3\frac{3}{4}$ - 9
B	Sides (2)	$\frac{3}{4}$ x $5\frac{5}{16}$ - $27\frac{1}{2}$	**D**	Back (1)	$\frac{1}{2}$ x $9\frac{7}{16}$ - $26\frac{15}{16}$

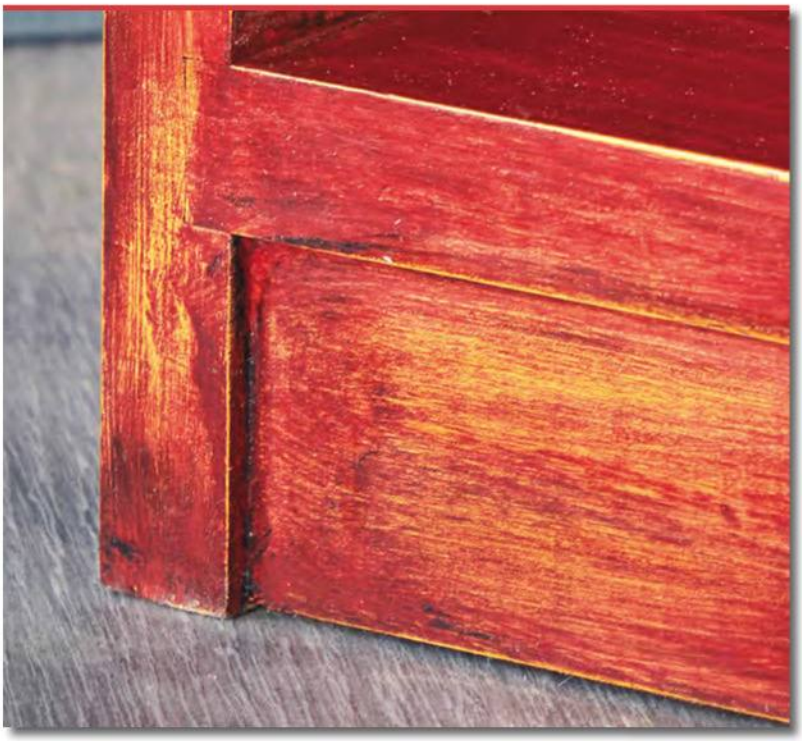
¾" x 6½"- 84" Cherry (Two Boards @ 3.8 Bd. Ft. Each)



Written by: Phil Huber; Project Design: John Doyle



▲ The overhanging top of the bookcase features casual roundovers for a hand-friendly surface. The edges on the rest of the project are merely eased in keeping with its quiet look and elegance.



▲ The layered paint finish allows the yellow base coat to glow through the red top coat, yielding a range of tones and visual effects. Tinted wax gathers in the recesses and corners to mute the colors and enhance details like the toe kick.

Pine Bookcase

A trimmed-down parts list and efficient use of boards results in a sharp-looking storage piece that you can fit almost anywhere.

Over the last 45 years, bookcases have been some of the most popular furniture projects we've featured in *Woodsmith*. As a result, there have been a lot of them. The designers, Chris, John, and Dillon, work at finding different approaches.

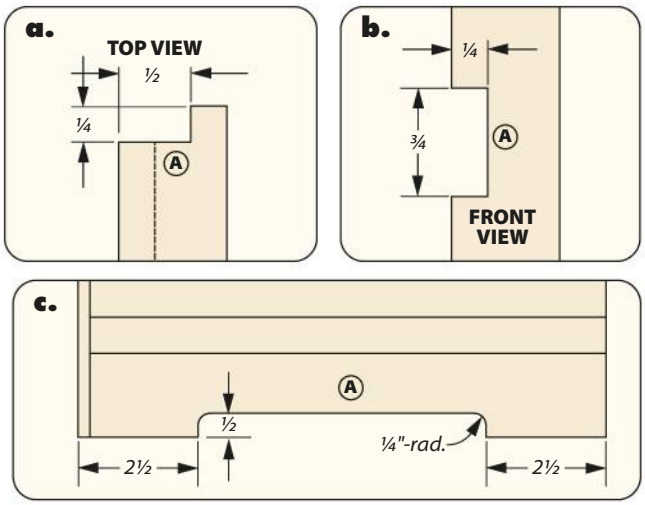
John had the bookcase card in this hand, and you can see what he came up with here. There are three characteristics I want to point out. First, is the size. Its small scale allows it to tuck into a bedroom or a reading corner of a family room. The profile is modeled after an antique he found for his own house — sometimes the ideas come to you.

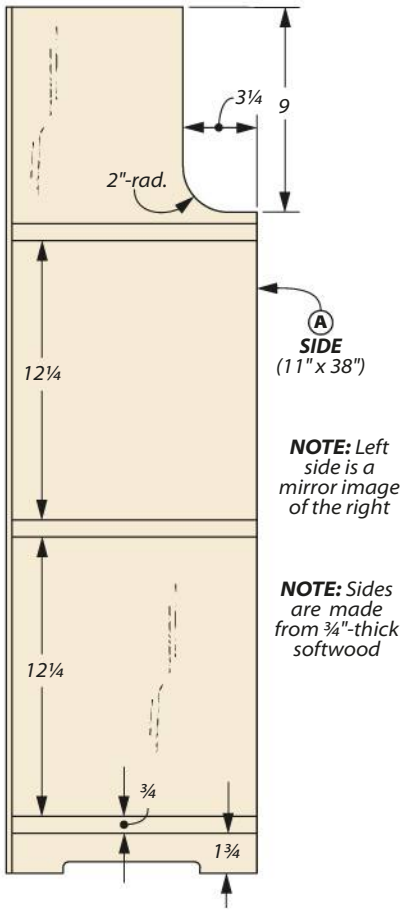
The second feature is that in drawing up the bookcase, John noticed that with some care, you can build it from a pair of 8'-long 1x12s. That makes the thrifty ones among us smile in satisfaction. Of course, you can use whatever material you like for this design.

The final item of note is the finish. John and I debated among a natural finish, stain, and paint. What we landed on is what we called a layered paint finish. Two colors of paint are used in thin coats. This allows the colors to shine through, creating a unique look. It's capped by a tinted wax. You can read more about that process in the article on page 64.

What remains now is to gather up the materials you're going to use and head to the shop. Don't be surprised if you find yourself looking at the completed project not long after.

Illustrations: Bob Zimmerman





Sides with **STYLE**

While it doesn't matter what you make this bookcase out of, I want to talk about some aspects of working with softwood 1x12s. The first of those starts at the home center. Set aside some time to rummage through the stacks.

Keep two goals in mind: straight, flat boards and those with good-looking grain patterns. (The second one isn't as important if you go with a paint finish.) The cutting diagram on page 63 shows one way to get the pieces you need from two boards. However, you can go off-script in order to get better-looking project parts.

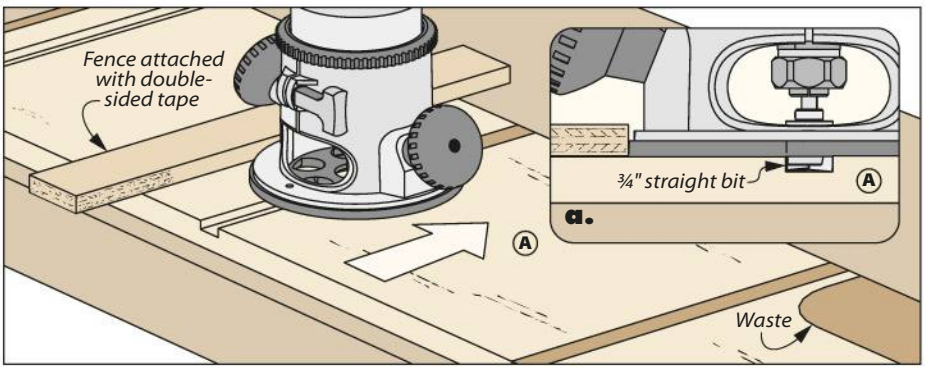
I take the plans, a tape measure, and some chalk with me to the store. I scribble some memory aids right on the boards.

IN THE SHOP. The joinery on the bookcase is dadoes and rabbets. The dadoes are sized to match the thickness of the shelves. For snug-fitting joints, it's a good idea to plane and sand parts first. Doing so after cutting the joinery can result in a loose fit. This is one of the reasons for taking the time to find quality boards — there's less planing and sanding to do.

SIDES. The drawing above shows the starting line: the sides. These two parts are made as a mirror-image pair. If your bookcase will have a natural or stained finish, these two pieces are the most visible. So select the best parts of your boards before cutting them to size.

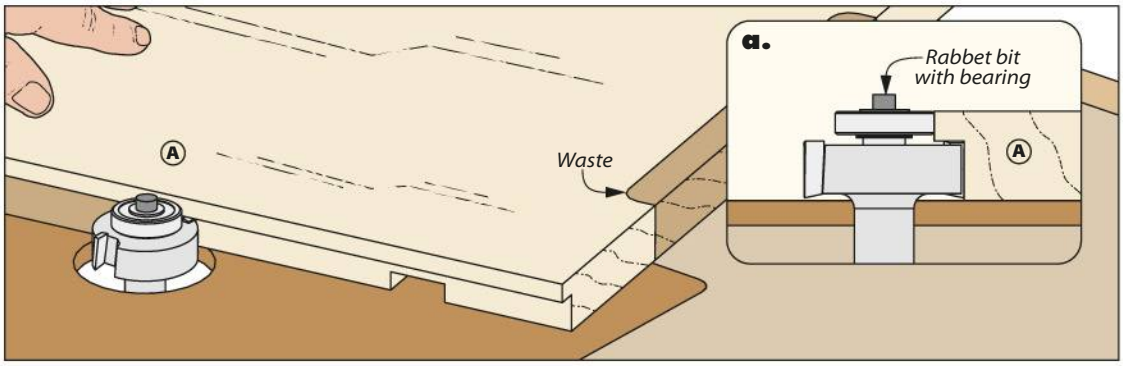
As I said, the joinery takes a fundamentals approach. The three shelves fit into dadoes, as shown in detail 'b.' For clean, flat-bottomed cuts, I prefer to use a router guided by a straightedge and a straight bit. This is shown in the box at left. Ideally, a 3/4" bit will work. However, if your shelves end up thinner, you can use a "plywood" bit. This kind of bit cuts a kerf that's fractionally smaller and is a good addition to your bit set.

SHELF DADOES



Essential Technique. One way to rout dadoes is to attach a straightedge guide to the workpiece with double-sided tape. The guide is offset from the dado location based on the distance from the bit to the edge of the baseplate (detail 'a').

RABBET THE BACKS



Rabbet for the Back. A rabbeting bit in the router table forms a square, flat rabbet. The bearing on the bit determines the width of the rabbet. It should be the same or slightly wider than the thickness of the plywood back panel. The height of the bit height sets the depth.

RABBET. The other joinery step is to cut a rabbet along the back edge of each side. Sticking with the router theme, the box above shows a router table method. The rabbet is sized to hold a plywood back panel that comes later (detail 'a').

SHAPING

Your attention shifts from joinery to shaping the sides. This involves cutting a step at the top and a cutout along the bottom. In order for both sides to end up matching, I do all the work on one side, then use it as a template to shape the other.

STEP BACK. The main detail of the bookcase is the step back at the top. It opens access to the upper shelf and adds visual appeal.

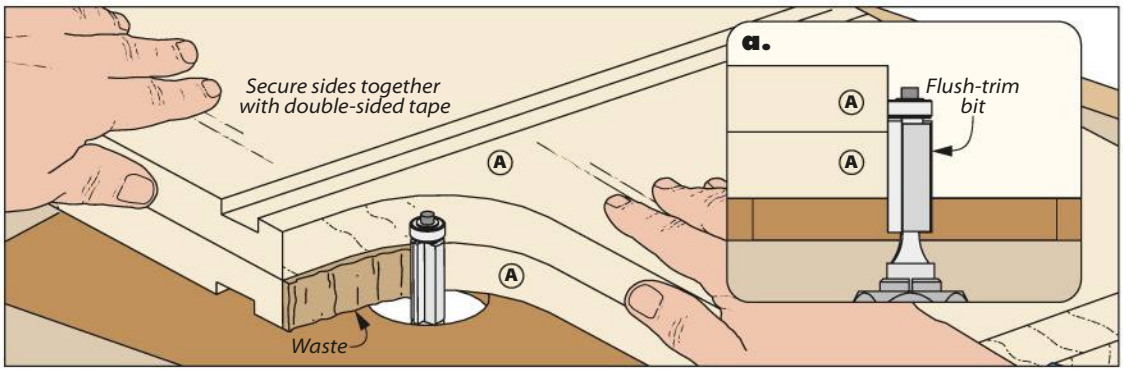
I laid out the shape of the step according to the dimensions shown in the main drawing on the previous page. Then I rough cut it at the band saw. The pine is light enough to balance without trouble. Another option is to use a jig saw.

From there, I refine the curve and work to my layout lines with a spokeshave, rasp, and file.

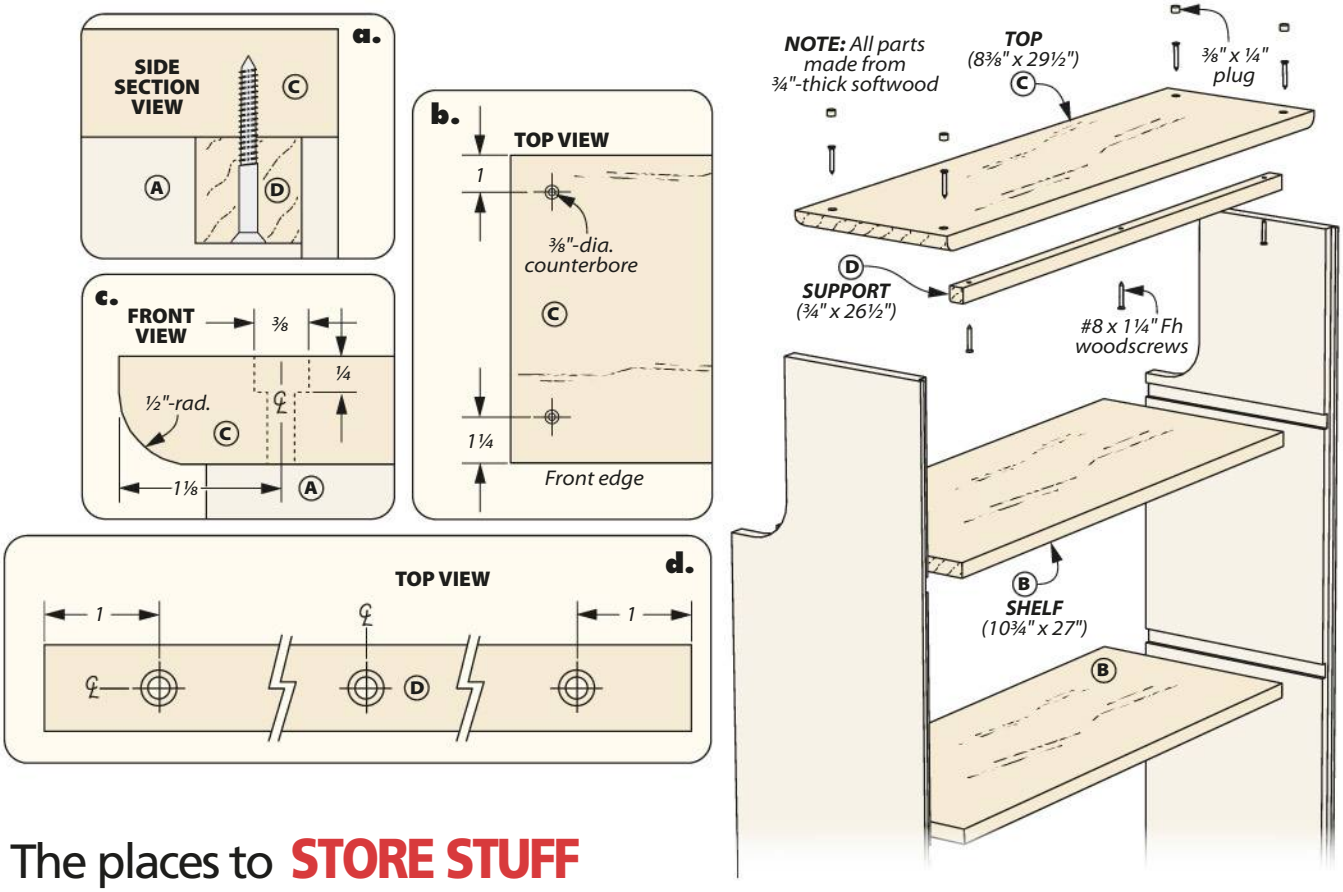
MAKE SOME FEET. The cutouts along the bottom of each side form two feet. This provides greater stability than long surfaces. To form the cutout, I drilled out the ends at the drill press. Then removed the waste at the band saw using the rip fence. Clean up the blade marks with files and sandpaper.

DOUBLE UP. With one side complete, trace the profile onto the remaining side. Then create a copy with a flush-trim bit, as illustrated below.

MAKING A CLONE



Flush Trimming. Transfer the shape of the completed side to the other. Cut away as much of the waste as you can with either a jig saw or a band saw. Join the sides with double-sided tape and trim away the remaining waste with a flush-trim bit installed in the router table.



The places to **STORE STUFF**

A bookcase isn't much without shelves. This one requires three — plus a top which, let's be honest, acts as another storage surface.

We've already talked about making sure the surface is relatively smooth on these parts before cutting the dadoes. Your focus at this point is making sure the shelves are all the same length. As for the width, the shelves are flush with the front of the sides. They extend to the shoulder of the rabbet at the back. It's a good idea to base the width off the sides rather than the dimensions listed in the drawing above.

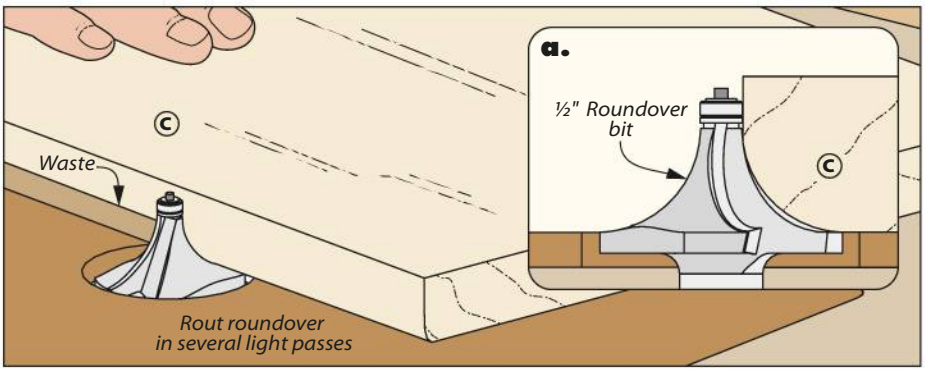
My preference is to leave the shelves a tad wide and have the excess extend beyond the front of the sides. I then trim the shelves flush after assembly.

GLUE IT UP. Speaking of, it's time to grab the glue bottle and clamps. The main objective is keeping the case square while the glue dries. Align the back edge of each shelf with the rabbet. Then pull a pair of clamps across each level.

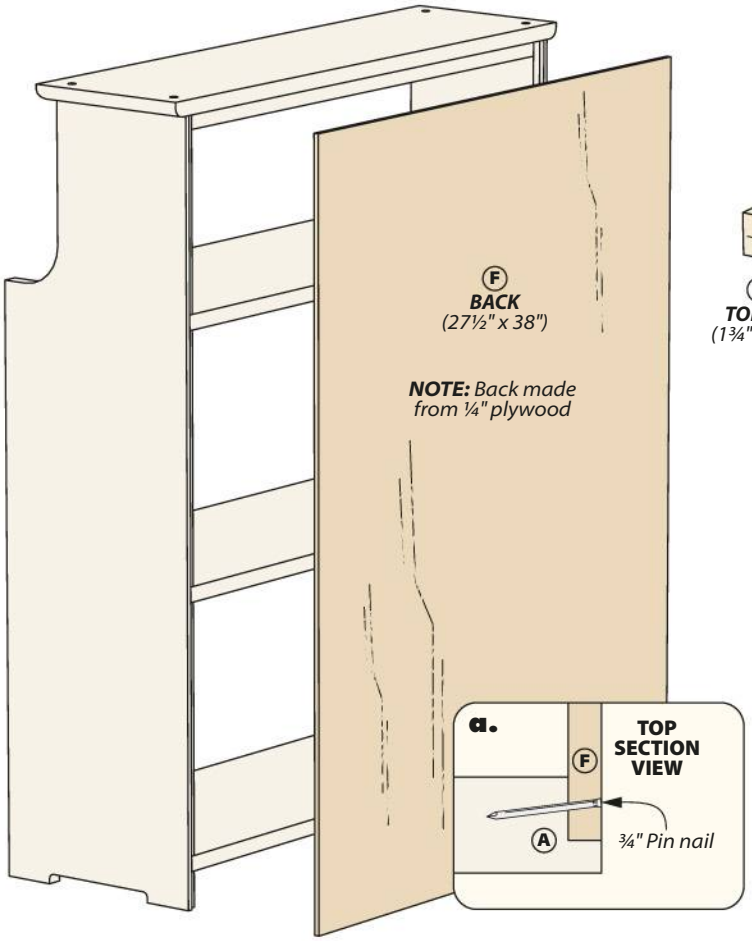
If you have assembly squares, clamp them in several corners. Otherwise, check for square once the clamps are snugged up. Then make any adjustments to the clamping pressure as necessary.

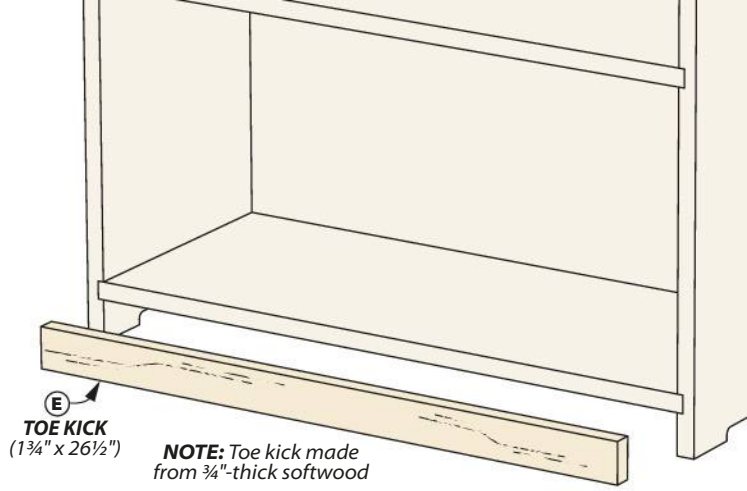
TOP IT OFF. The top overhangs the front and sides. Like the antique original, the underside of the top sports a roundover, as shown in detail 'a.' The box at left shows this step being done at the router table.

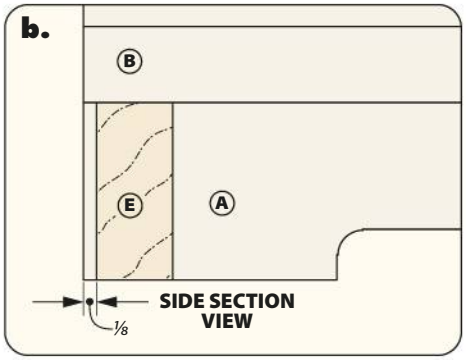
PROFILE TOP EDGE



Generous Roundover. The top features a roundover on the lower edge (rather than the top). This lightens and softens the top's appearance. While pine is easy to cut, it's still good practice to rout in stages, raising the bit with each pass.







The top is attached with woodscrews counterbored from the upper face, as you can see in details 'a' and 'b.' Matching plugs cover the screw holes.

Attached below the top sits a support. It serves to stabilize the top edge of the back panel. It's attached with glue and screws, as in detail 'c.'

BACK IT UP

There are just two parts left to make. The first of these is a toe kick that sits just below the bottom shelf. Detail 'b' shows how it's inset slightly to create a shadow line.

If you plan to paint the bookcase, I recommend a construction pause here. You have much better access and will get a smoother result painting before installing the back. Turn the page to follow our path, or chart your own course.

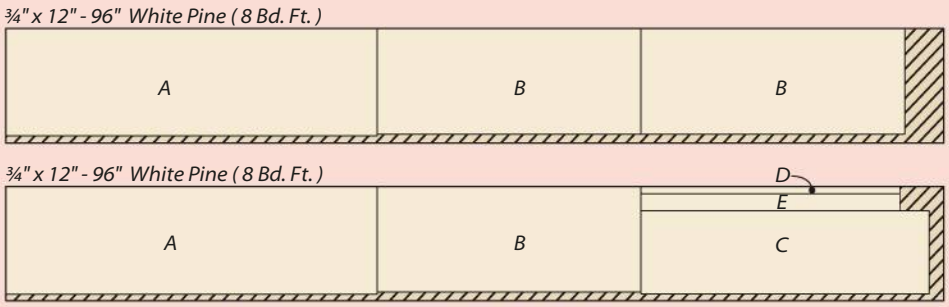
THE ONLY PLYWOOD. The back panel is made from plywood. When it's glued and nailed into the rabbets and secured to the support, it adds stability to the whole structure. Take care to size the back for a snug fit.

The back is finished with a coat of lacquer (tape off the glue surfaces). Once again, do this prior to attaching it to the case. W

Materials, Supplies & Cutting Diagram

A	Sides (2)	¾ x 11 - 38
B	Shelves (3)	¾ x 10¾ - 27
C	Top (1)	¾ x 8⅜ - 29½
D	Support (1)	¾ x ¾ - 26½
E	Toe Kick (1)	¾ x 1¾ - 26½
F	Back (1)	¼ ply. - 27½ x 38

- (7) #8 x 1¼" Fh Woodscrews
- (4) ⅜"-dia. x ¼" Wood Plugs



ALSO NEEDED: *One 48" x 48" Sheet of ¼" Birch Plywood*

Layering Paint for Richer Color

While pine offers its own unique look, it also provides an ideal canvas for a painted finish.

Improving your woodworking skills opens new possibilities for your projects. The same holds true for finishing.

For the pine bookcase on page 58, we wanted to do a painted finish. It's tempting to think of paint as a continuous coating on a project — or part of a project. Paint can be more than a uniform suit. Like fashion, there's more to a great look when you layer. For the process I demonstrate here, it involves applying two colors of paint. At last a tinting coat of wax brings out other details and texture.

SURFACE PREP. Step one is getting your project ready for paint. Yup, sanding. The specific grit isn't too important here. What is important is uniformity of the surface. With the thin coats of paint that we'll be applying, variations in the surface will be noticeable in the finished piece. You can use a card scraper to get an even, smooth surface. Then you can pick up the steps in the photos on the next page.

Written by: Phil Huber

BUILDING UP A LAYERED PAINT FINISH

Base Coat. Apply a thin yet even coat of the base layer. Avoid runs and drips in order to keep the surface flat. The acrylic "milk" paint used here brushes out easily.

Sand It Level. When the first coat is dry, go over the surface with a sanding sponge. You're looking to knock down any raised grain and create a level, smooth surface.

Second Coat. Spend some time brushing out an even coat. With thin coats, the two colors blend create a unique look as the first shines through the translucent second coat.

Scuff it. With an abrasive pad, rub areas of the project that will see more wear. This creates highlights. My preference is for subtle wear marks. The project should earn its own.

Apply Wax. The final step is a coat of pigmented wax. I like using dark brown or blank. The wax pigments embed in the crevices increase contrast in the grain.

Buff. With a soft cloth or shop rag buff out the dry wax to a satin sheen. Any remaining wax in the corners create a sense of age and builds a greater depth of color.

Sources

Most of the materials and supplies you'll need to build the projects are available at hardware stores or home centers. For specific products or hard-to-find items, take a look at the sources listed here. You'll find each part number listed by the company name. See the left margin for contact information.

MAIL ORDER SOURCES

Project supplies may be ordered from the following companies:

Woodsmith Store
800-444-7527
store.woodsmith.com

Ace Hardware
888-827-4223
acehardware.com

amazon.com

Benjamin Moore
855-724-6802
benjaminmoore.com

Dick Blick
800-828-4548
dickblick.com

General Finishes
generalfinishes.com

The Home Depot
800-466-3337
homedepot.com

Horton Brasses
860-635-4400
horton-brasses.com

JessEm
506-777-2582
jessem.com

Lee Valley
800-871-8158
leevalley.com

Norton Abrasives
508-795-5000
nortonabrasives.com

Real Milk Paint Co.
800-339-9748
realmilkpaint.com

Rockler
800-279-4441
rockler.com

Woodworkers Hardware
800-383-0130
wwhardware.com

ALL ABOUT *(p.12)*

For both oilstones and waterstones, *Norton Abrasives* is a good source. The honing guide and honing compounds shown come from *Veritas* (and are sold by *Lee Valley*). Leather strops can be found at some hardware stores, most kitchen supply store, and at a variety of locations online.

- **Lee Valley**
  Honing Compound . . . 05M0801
  Honing Guide 60N0105

GREAT GEAR *(p.24)*

- **JessEm**
  Pocket Mill Pro 08250

CAT CASTLE *(p.28)*

The paint we used for most of the Cat Castle was *Benjamin Moore*'s "Desert Tan." For the accents of masonry along the arch and up the towers, we used that same paint mixed with a hint of any black acrylic or latex paint. Finally, for the banners, I used *Jo Sonja*'s Geranium Red, which can be purchased through *Dick Blick*.

HOOSIER CABINET *(p.36)*

- **Lee Valley**
  Blum 500mm Slides . . 02K5155
  Blum Slide Jig Tool . . . 02K6460
  Blum Drilling Jig 02K6461
  Slide Screws 01Z6004
- **Horton Brasses**
  1¼" Knob K-12-1.25-SN
  1" Knob K-12-1.00-SN
- **Rockler**
  No-Mortise Hinges. 22980
  ¼" Shelf Pins 30437
- **Woodworker's Hardware**
  Tambour 47½" x 35⅝" NPV3 HI

When you visit the *Woodworker's Hardware* site, The SKU above will show the hickory version for your tambour door among a list of other wood options. The reeded glass for the upper case doors was purchased at a local glass and mirror shop. Two coats of laquer will protect the glorious unstained hickory.

MEMORY BOX *(p.48)*

- **Rockler**
  Turn Buttons 22890
- **Home Depot**
  Acrylic Sheet 628837
- **Amazon**
  Brass Knob B076TDHKMH
- **Ace Hardware**
  Feet 52725

The memory box was topcoated with two coats of lacquer. No stain needed on that good-looking walnut.

PINE BOOKCASE *(p.58)*

I was looking for two paint colors that would blend well for the layered paint finish I planned for the bookcase. I found two cans in the Woodsmith finishing room: "Tuscan Red" and "Sunglow" from *General Finishes'* acrylic "milk paint" line. They worked great.

However, I discovered that "Sunglow" has since been discontinued. You can get a similar look using "Fresh Lemon" from *The Real Milk Paint Co.* (a true milk paint).

- **General Finishes**
  Tuscan Red . . . . . same
- **Real Milk Paint Co.**
  Fresh Lemon RMP15

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